

ST FORMAT



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rate all 15 top
ST hard drives

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TRADE
SECRETS!**

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BOB..." IT'S A
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WITH BALLS!

ST FORMAT COVER DISK 27

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Put your pens and
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pattern generator



ALL PROGRAMS STE COMPATIBLE

Disk format by Rob Northen

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15 packed pages of
top games, graphics
and technical tips
inside this issue



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DARKMAN



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With the ability to take on the appearance of anyone he chooses, he has sworn to avenge his would-be assassins whose evil exploits have left him hideously disfigured. Now you take on the role of **Darkman** - master the technology of his disguising system - enter the gang of mobster Robert G. Durant and conquer them from within.

Live through all the high spots of the movie - the breathtaking helicopter fight sequence - the skyscraper shoot-out - dice with death as you are plunged, swinging into the heaving freeway traffic.

Darkman lives... but not for long?!

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The strangest things happen in the experiences you will have in **Elf**. Your magic ring can lead you deeper into the castle guards, low-life creatures, get-smart campaign, but these rivet-head cantankerous, tricky creatures and devices of your gnostic powers. The game features allowing Numerous secret areas help you with your quest. **your own ghost may not**

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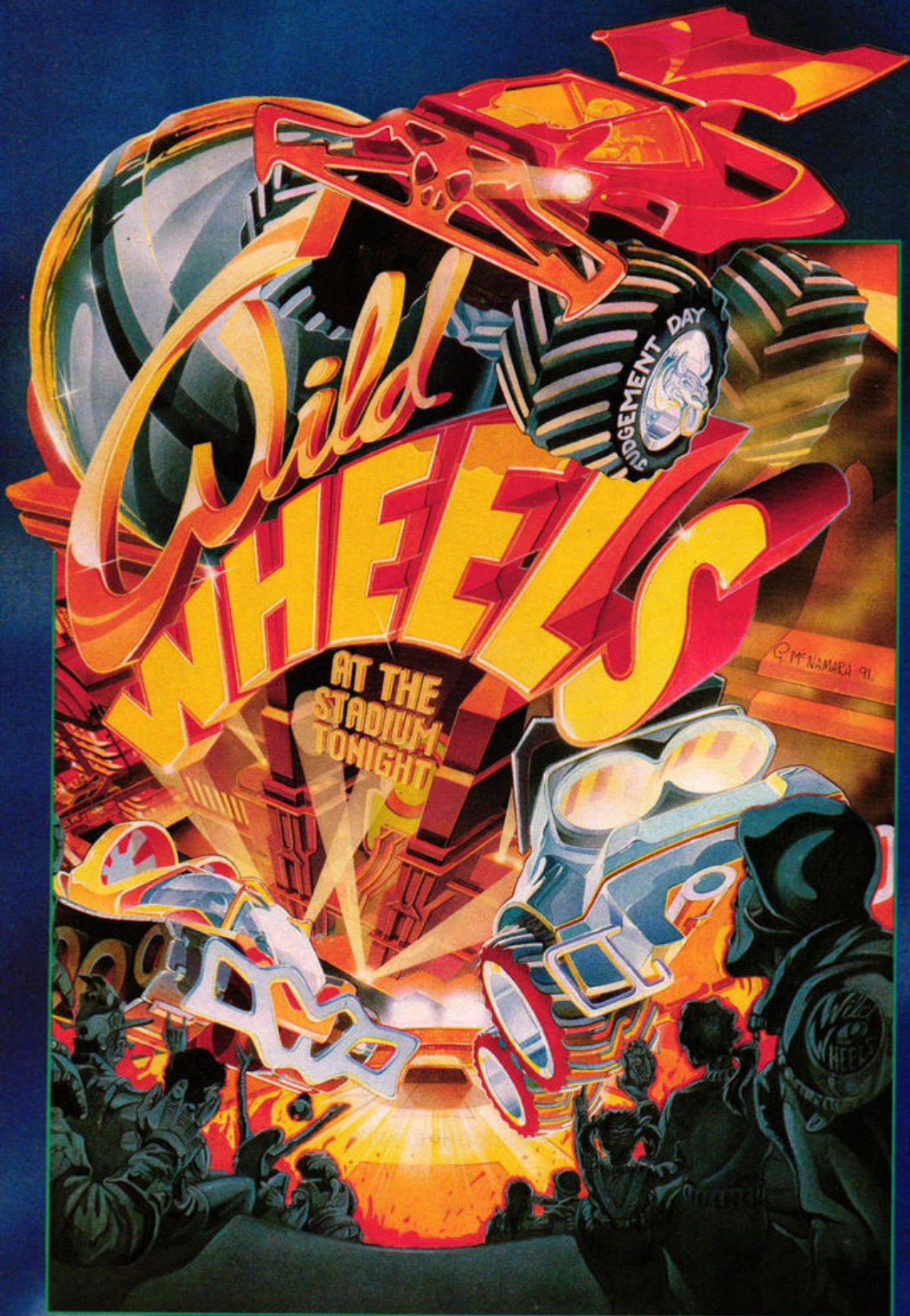


open in fairy tales - but nothing so strange as
encounter on your travels as **Cornelius the**
cast many spells, increasing in power as you
mystical lands of gooks and goblins. Even the
things with the IQ of a cold-steel rivet, are on a
they may seem a little backward to start with,
ed, bovver-bullies will soon become
kies if you let them. Many weird, villainous
puzzles test your game-play technique and
you can even control some of the background
you to get to where you think you should be.
e deep within the forest where vital clues can
but beware...

materialise to haunt you!



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My head is thumpin', and my heart is pumping the adrenalin around every vessel of my hyper-tense body - the 'driving unit', that will be shoe-horned, wedged like a Colt 45 into its holster, as I am placed into the command seat of my vehicle - ready to enter the arena of play... and combat.

"Wild Wheels" they call us. Combatants who play a "game" - a game where there are two ways to lose... down on points or down on fuel - the fuel of life! And our "kit" for action are the finely honed masterpieces of engineering... machines that will pole-axe the opposition, melt them, crush them, detonate them into a million white-hot, speeding grains of shrapnel. The 'kit of death' where many of us will experience our last, final, blinding flash. Now, in the arena, the game becomes a struggle to win, a fight for life. The noise from the screaming crowd is drowned by the incessant roar of the mighty heart of this mechanoid beast, its engine pushing out every ounce of power to keep me just ahead, and delivering a heavy, sickening blow into my back as it accelerates at my command. Taking aim. I firm up every muscle ready for the great burst, the deafening scream as I unleash my lethal messenger... and its message - "GAME OVER!"

But that's just half the game story. Now YOU enter the arena... ENJOY THE SHOW!

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ST FORMAT

ABC January - June 1991 70,258

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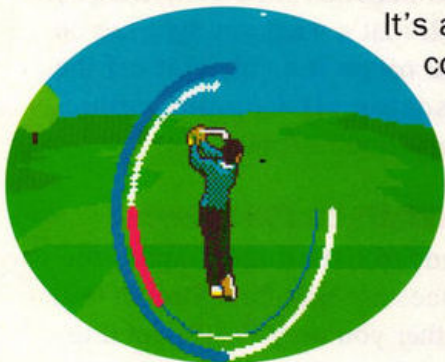
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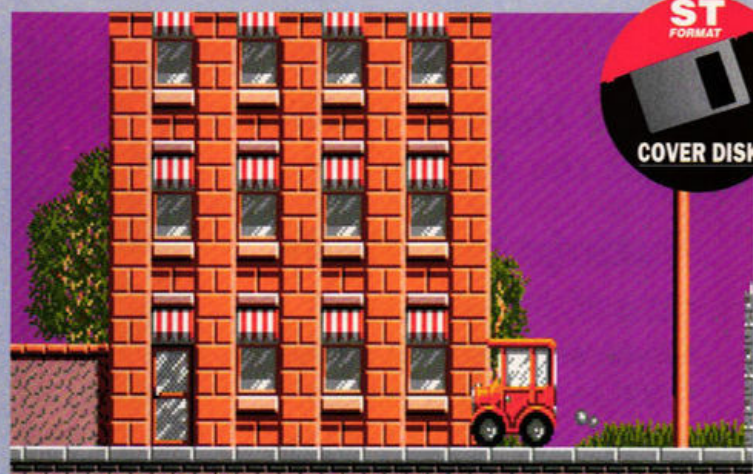
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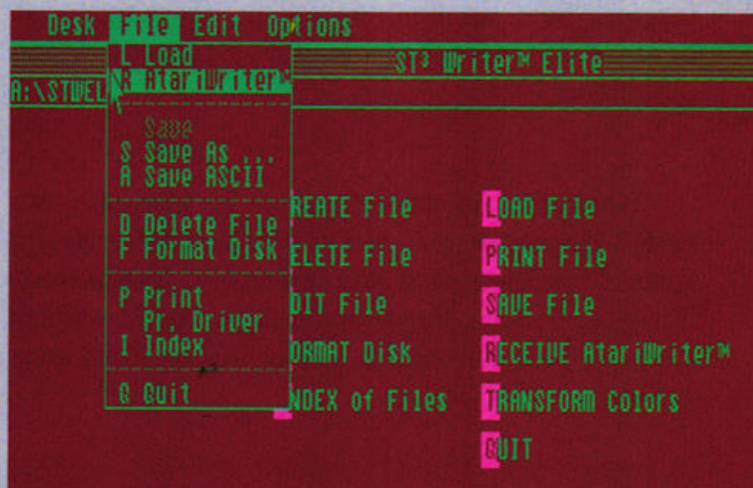
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PUZZLE OVER VIRGIN'S PLAYABLE AND ADDICTIVE **ROLLING RONNY** DEMO...



GAWP AT THE MIND-BLOWING GRAPHICS YOU CAN CREATE WITH **SPIRO...**



MARVEL AT THE QUALITY LETTERS YOU CAN WRITE WITH **ST WRITER ELITE...**

YOU CAN DO ALL THIS AND MORE WITH THIS MONTH'S CRAM-PACKED COVER DISK

PLUS View your pictures on any monitor with GEM VIEW ● Discover how your memory is being used ● Play with your files and directories
all this and more begins on page 22

WHERE'S THE MAC?

PageStream 2

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for the Rest of Us.*

PostScript Font Friendly

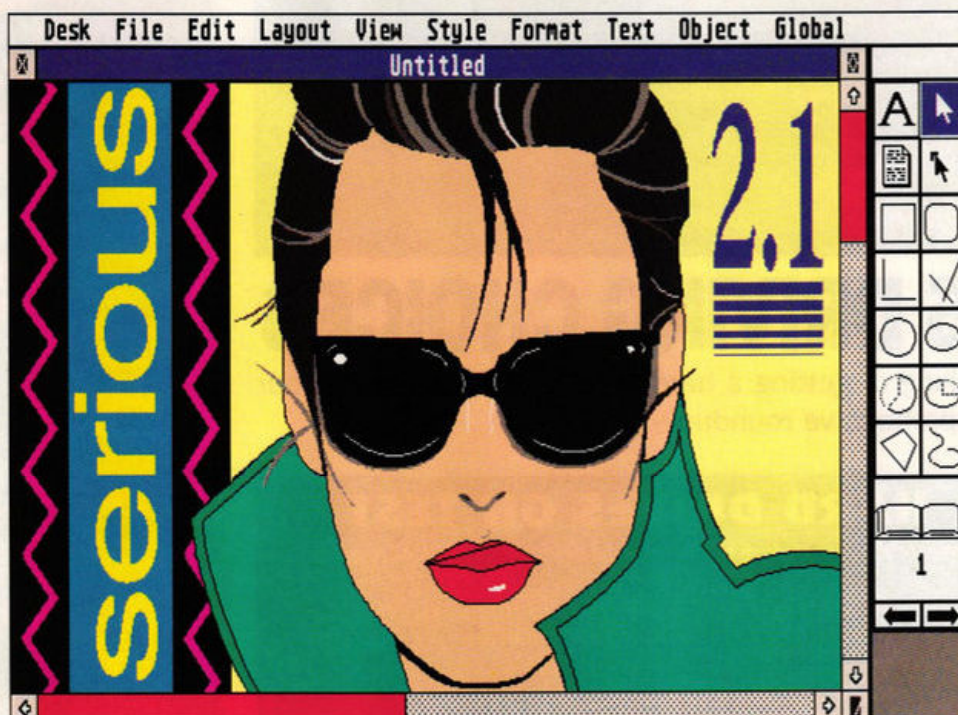
- Use PC PostScript fonts!
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And Compugraphic Fonts

- Use Compugraphic Intellifonts!
- 10 are included!

We Know our Graphics

- IMG, TIFF, GIF, GEM, MacPaint, EPS, Degas, NEO, TNY, IFF...



Actual PageStream 2.1 screen shot. PageStream is ST/STE/TT compatible.

Have you ever been envious of all the neat DTP programs for the Mac? They have all those great PostScript fonts, multitudes of clip art and with Adobe Type Manager they don't have screen-jaggies. "Sure, we didn't have to mortgage the house to buy a computer, but it would be nice to have all those fonts."

SAY NO TO MAC ENVY

At Soft-Logik, we have a cure for Mac envy. We call it PageStream 2.1. Do you want PostScript fonts? PageStream lets you use any PC format PostScript font. Plus, PageStream can print PostScript fonts on your dot matrix, inkjet, HP or Atari laser printer!

SAY YES TO HINTED COMPUGRAPHIC FONTS

There are now two types of Compugraphic fonts for the Atari: unhinted, non-standard format fonts and hinted PC standard Intellifonts. Guess which we chose? PageStream 2 has the latest Compugraphic Intellifont Bullet technology. These typefaces are hinted so that they look great on all printers, even at small sizes. Of course we give you ten fonts from the Times, Triumvirate and Garamond families to get you started..

LOOK MA, NO ATM!

Because Adobe Type Manager is not likely to be released for the Atari any time soon, we've built font scaling technology into PageStream 2.1. When you select Palatino Italic 72, that's what you will see on the screen, even if you rotate it or bleed it off the page. PageStream scales all Compugraphic, PostScript and Soft-Logik outline fonts.

HOW MANY GRAPHIC FORMATS DO YOU KNOW?

Take thirty seconds to list all the graphic formats you know. Chances are that PageStream will know even more! Whether you need PostScript illustrations with bitmap previews, 16 million color pictures or scanned greyscales, PageStream will handle them.

WHY DID WE GO TO ALL THIS TROUBLE?

Soft-Logik exists because of Atari users like yourself. We grew up with the Atari ST and we think Atari users deserve the best. We believe PageStream 2.1 is the best. So the next time you feel Mac envy, take a dose of PageStream 2.1. You won't be left wondering "where's the Mac?"

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THIS TIME LAST YEAR

WHAT WAS IN THE NEWS A YEAR AGO

● *Calamus*, that ever-popular German DTP package, took a hefty £200 price drop. Signa revealed that they had made the move to make way for the colour version *Calamus SL*, which they reckoned would be available by October of that year. One year on, *Calamus SL* still hasn't appeared, although Signa's boss Mike Dale tells us that they are currently translating the manual and changing the dialogue boxes to English.

● The former demo coder and itinerant Swedish chap, Anders Nilsson, announced his *TCB Tracker* program to an unsuspecting public. One year on, his sample sequencing package has gone through about ten versions and is now the preferred tool of the professional music creator.

In fact the funky music to *Powermonger* was created using this easily-learned music program. The latest version (available from MPH ☎ 0603 503382) is a full stereo program with MIDI support.

● *DeluxePaint ST* was given the full *ST FORMAT* review treatment (if you missed it, turn to page 136 and order your back issue). We promptly gave it a stonking great 96%. Word on the street (not Coronation Street either) is that an update is currently being worked on, so keep your eyes peeled for *D-Paint 2*.



● Wondering about the ST's DTP power? The entire page shown here was produced on *Calamus* – including the photo and the posters the model is pinning to the wall. The program's recently been updated to full colour and is easily a match for DTP packages costing five times as much.

BETWEEN THE LINES: STF COMMENT

Have Atari left it all too late? Their release of the *ST Book* by the end of the year is part of their attempt to "re-position" the ST as a general computer, rather than just a games machine or just a serious word processing vehicle.

At the recent Atari show in Dusseldorf, Sam Tramiel said that Atari "can't be all things to everyone." The quote came when a German journalist was moaning about the lack of a keyboard on *Stylus*, the new ST that can recognise your handwriting (sort of missing the point about the machine there, perhaps).

What Tramiel did say was that Atari would produce machines which were cheap enough to seriously undercut the competition while still offering innovation. *Book* and *Stylus* (see page 63) are the results of this philosophy and – certainly in the case of the latter – they offer innovation in abundance.

Tramiel is very happy with the development process of his new breed of STs. He is pleased to be in the headlines again and sincerely hopes that a new kind of user will enjoy machines such as *Stylus* – machines which attempt to placate the anti-technology diehards who have no desire to type things into a computer. (He cited his wife as a perfect example.)

Book and *Stylus* are well designed machines crammed full of ports and sockets. They look professional in a way that the dear old STFM never will. More to the point, the public are beginning to take notice of a company best known for bringing the games console to the world. All the signs are that Atari haven't left it too late; they've just been waiting for their moment.

Exclusive reports from the Dusseldorf Atari show ● 33MHz accelerator board makes ST ten times faster ● ST gets the best DTP package ever

Atari reveal big plans for the ST

by Andrew Hutchinson

Atari's Managing Director Sam Tramiel has announced some revolutionary updates to the ST range of machines.

The STE, Mega STE and TT are all to incorporate revolutionary hardware and software packages designed to make the ST the most popular computer of the '90s.

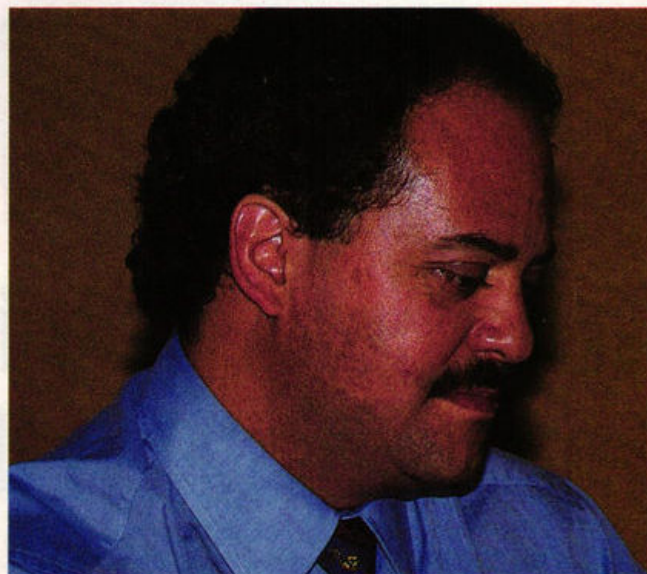
Speaking in an exclusive interview with *ST FORMAT*, Tramiel announced that multi-tasking TOS will be released for the TT by March 1992. This long awaited upgrade will enable the 32-bit TT to run different programs in memory at the same time, with the user switching between applications by means of a "hot key" keystroke.

This upgrade will only be used in the TT and any other "high-end" machines with hardware memory protection, to keep the data safe.

New TTs are to be released with the multi-tasking TOS already installed, although anyone who already owns a TT will be able to purchase a new chip set to enable multi-tasking on existing TTs. The installation of a multi-tasking environment for the TT means that the machine is now a powerful and direct com-



● Atari's Dusseldorf show, traditionally their strongest launch event, featured the entire ST range, new machines and some incredible software advances.



● Atari's head honcho Sam Tramiel, recently in the UK, has some amazing plans for the ST range, which will stretch beyond interactive compact disc technology and into the realms of multimedia.

petitor for business computers such as Apple's IIs or IBM's 386 family.

● The STT transputer board – the high-speed add-on STF revealed exclusively in issue 17 – is working its way through the

"A multi-tasking TOS for the TT will definitely be available by March"

SAM TRAMIEL

development process. Bob Gleadow (Atari UK's Managing Director) has told *FORMAT* that all the preliminary work has been completed. He has also revealed that the STT project may not be restricted to transputer technology, but he wouldn't say what else it might include. We're

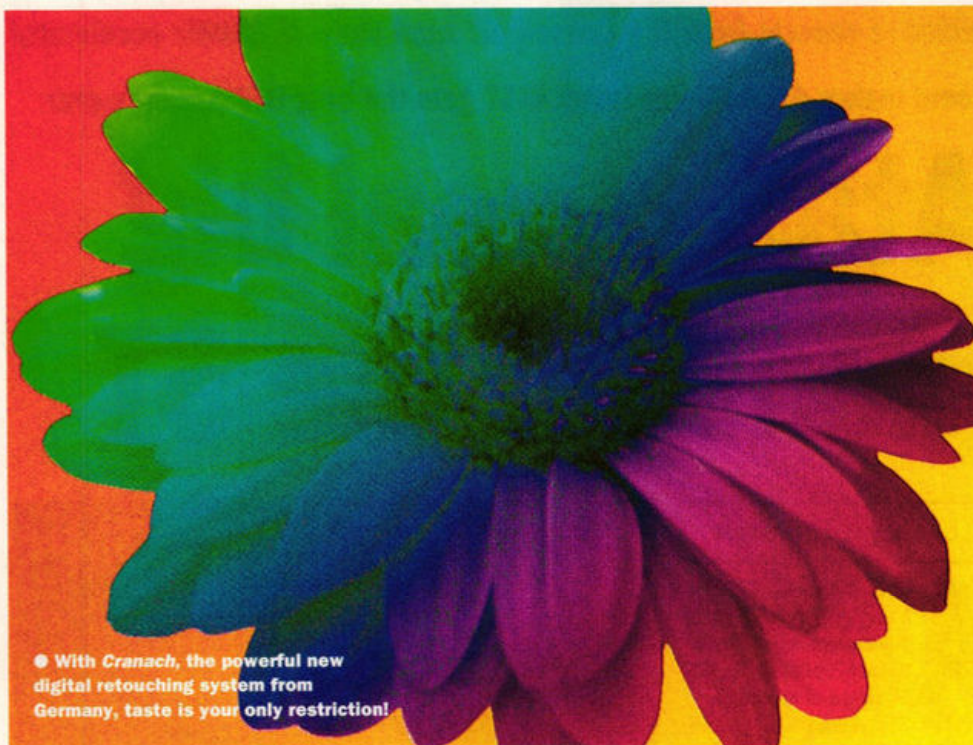
putting our money on some sort of vastly improved graphics display on a card.

● Owners of Mega STEs and TTs will soon be able to upgrade their floppy drives to a full 1.44MByte version. All new TTs released after October will feature the high density drive. Sam Tramiel told *ST FORMAT* that inexpensive upgrades would be made available to existing Mega STE and TT owners, but unfortunately not to 520 and 1040 STE/STFM owners.

● Atari have finally revealed that they are producing an analog joystick for the STE, Mega STE and TT. Atari invented the present form of joystick about ten years ago and they are hoping to have a formative effect on game-playing again – with their new model. The company will be releasing their analog joystick as an add-on.

● Interview with Sam Tramiel: page 63

TOP ST SOFTWARE AT RIDICULOUSLY LOW PRICES – PAGE 118



● With **Cranach**, the powerful new digital retouching system from Germany, taste is your only restriction!

True colour digital retouching on the ST

by Andrew Hutchinson

Imagine this: you scan a photograph and a perfect reproduction appears on your ST's monitor in exactly the same colours as the original. Then you decide that some of the colours aren't quite right, so you change the tint on one of the colours by a fraction, finally saving the finished image in TIFF format for import into a DTP package. All this is now a reality,

thanks to **Cranach**, a brand new package from Germany.

Cranach is a digital retouching package which enables scanned images to be altered in a variety of ways, in colour.

Cranach can alter a picture subtly or drastically. The tint in a girl's dress can be tweaked or the hem-line raised, or she can be transplanted to a desert complete with cacti. In effect you can create composite pictures digitally, on-screen.

When the package is used in conjunction with a true colour graphics board, scanned images

can be modified in any colour imaginable, in real colour. This kind of technology is likely to be of immense use to television stations, publishing companies or anyone else who likes to have complete control over the look of a picture.

TMS, the producers of **Cranach**, offer a variety of options which can be tailor-fitted to any job. At the time of the Dusseldorf show, a UK price had not been set. You can contact TMS at Dr Gessler Strasse 16, 8400 Regensburg, Germany ☎ 010 49 941 95163.

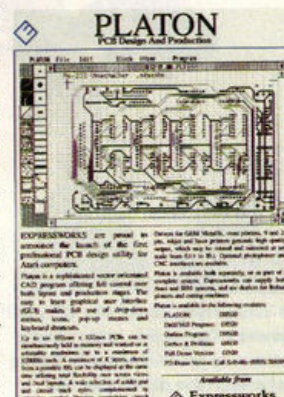
Circuitous designs

Expressworks, the company who have the dubious honour of producing one of the most expensive packages for the ST (step forward, **DynaCADD**), have just announced a PCB (printed circuit board) design and production program which goes by the (no doubt deeply significant) name of **Platon**.

Platon is a vector-orientated program for designing PCBs of up to 932x832mm in size. Six of these can be held in memory at one time, each consisting of up to eight layers.

All the usual electronic symbols are included – circuit elements, conventional ICs, surface mounted diodes, plug connectors and different solder pad and circuit track styles. Drivers for plotters, 9-pin, 24-pin, inkjet and laser printers are provided.

The **Platon** program itself costs £195, a drill/mill program is £95, an outline program costs £195 and Gerber and Drilldata costs £69. **Expressworks**, 75 Heath Lane, Upper Hale, Farnham, Surrey, GU9 0PX ☎ 0252 726255, Fax 0252 727125.



● **Platon** is a fully-featured PCB design program which can output to almost any printer.

Making beautiful music together



● **DMC**, producers of the top-end DTP package **Calamus**, have dipped their toe into the multimedia market and come up with this swish system, shown at the Dusseldorf show, combining graphics, text and music. Click on an icon and you get not just a graphic display but also a corresponding sound output.



● All right, so not all of us are likely to find a use for a sticky label etching program – but it does demonstrate how versatile the ST is. It really can turn its CPU to any purpose.

Stick with your ST

Launched at the Dusseldorf show this year were two novel uses for an ST, both linked with the massive interest in DTP in Germany. Practically every stand was showing some form of publishing package – they even had a huge demonstration area in the middle of the hall with lots of keen chaps and chapettes demonstrating the software.

On one stand TMC, the makers of **Calamus**, were demonstrating a program which etches

designs on rolls of sticky paper. A special semi-plotting machine was cutting designs such as the Atari logo in the paper. The software could take any IMG type file, trace it and then transfer the contents to the etching machine.

Profi-partner were demonstrating a package called **Print-line**. This program enables designs to be printed on special contact paper and the results can then be ironed onto fabric, like a T-shirt. What made this pro-

gram different was that it used a laser printer. The results are far superior to those dot matrix printed efforts and look surprisingly effective. The only problem at the moment is that you can have any colour you like, so long as it's black.

DMC live at Postfach 89, D-6229 Walluf, Germany. Profi Partner are at Regina Lutt, Monkhofer Weg 126, 2400 Lubeck, Germany ☎ 010 49 451 505367.

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WHISPERS

ST NEWS FROM ALL OVER THE GLOBE

● Anyone familiar with the Public Domain scene on the ST will be familiar with *Easy Text*. The cheap DTP package has recently handed in its amateur status and gone professional in a new release called (wait for it) *Easy Text Professional*. New additions to the program include: user defined fills; text alignment; typography settings (such as letter spacing); import and resize of GEM, IMG, TNY, P13, PC3 files; a full screen text editor; column guides; link frames and tagging. *Easy Text Professional* is available now from ZZ-Soft, 25 Honeyhole, Blackburn, Lancs, BB2 3BQ ☎ 0254 672965.

● Sound Technology are now shipping *Polyframe*, a generic synthesizer editor from German company C-Lab. Up to three editing modules can be held in memory at one time. These modules can either be tailor-written synth drivers or an all purpose program which will be included in the package. Modules for the Korg M and T series are ready now, as is a Yamaha SY77/TG77 version. Planned drivers include the Roland U20/220, Oberheim Matrix and Ensoniq VFX, with further modules planned later on. *Polyframe* costs £310, and further modules cost £59. Sound Technology ☎ 0462 480000.



● Frontier Software's new RAM upgrade - available in capacities ranging from 1MByte to 4MByte - uses SIMM boards for quick and simple expansion.

● Frontier Software have announced an innovative RAM upgrade. Their new boards use SIMM (Single In-line Memory Module) technology, no matter which version of the ST you own. The advantage of SIMM RAM cards is that they can be slotted in and out when more memory is required. What's more, if and when a decision comes to upgrade to an STE, you can simply unplug the boards and bung them into your STE (that is if Atari stop soldering the flipping things in). 1MByte, 2MByte, 2.5MByte and 4MByte versions of the board are available now. The basic Xtra-RAM Deluxe board costs only £39.99, so if you've got some SIMMs lying around here's your chance to use them. Frontier Software, PO Box 113, Harrogate, North Yorkshire, HG2 0BE ☎ 0423 567140/530577.

● Evenlode Soundworks, distributors of the Steinberg range of MIDI equipment, have announced a new bundle called *StudioPac*. This comprises Steinberg's popular *Cubase* sequencing program and *Midex Plus* for £645. *Midex Plus* is a hardware unit which upgrades an ST to all format SMPTE sync, four MIDI outs, two MIDI ins and four expansion slots. Evenlode Soundworks, The Studio, Church Street, Stonesfield, Oxford, OX7 2PS ☎ 0993 898484.

Accelerator board could make your ST run ten times faster

Gadgets by Small, the company that produced the acclaimed Spectre GCR Macintosh emulator for the ST, have announced an accelerator board with a base configuration of 33MHz which enables an ST to run at speeds up to 50MHz, compared with an unexpanded speed of 8MHz.

The 68030 SST board is shipping from America now. It comes with 4MBytes of RAM built in SIMM format and you can expand this to an incredible 12MBytes by simply slotting in greater capacity boards.

The vast majority of applications work perfectly well with the accelerator board - but should a program crash it, it can be turned off from a pull-down menu. The board should be of interest chiefly to people who use their STs for extremely memory intensive applications such as DTP or music.

In terms of speed, the board can outstrip the TT by about 25%. It can

speed up a standard ST by a factor of about ten. Use the board in conjunction with a Spectre GCR and you can easily outrun any Macintosh. In fact Dave Small, the board's creator, told ST FORMAT that "The only computer Apple have got which can outrun an ST with SST fitted is their Cray X/MP."

As Dave points out, "Lots of people can do accelerators if price is no object - let's say, hook an ST to a Cray X/MP. Doing something the ST market can afford is a separate issue." For this reason Gadgets by Small have managed to keep the price right down. The 33MHz board with a 68882 coprocessor and four MBytes of SIMM RAM costs \$800 (about £450). Speed freaks can contact Gadgets by Small direct at 40 W Littleton Blvd, #210-211, Littleton, CO, 80120, USA, ☎ 0101 303 791 6098, Fax 0101 303 791 0253.



● Dave Small of Gadgets by Small is the chap who's responsible for the amazing Spectre GCR Mac emulator. Ever intent on pushing the ST to its limits, he's now designed a 33MHz accelerator board.

Future goes Public

Future Publishing, the most successful publisher of specialist computer magazines in the UK and the company that bring you ST FORMAT every month, are to launch a new magazine aimed at buyers of Public Domain software.

Cunningly titled *Public Domain*, the magazine will be a multi-format affair concentrating on the three major 16-bit machines: the ST and those other two. The £2.95 title will feature a specially developed tri-format 3.5 inch disk. This covermount will be crammed with PD

and Shareware programs for these 16-bit machines.

The content of the magazine will be heavily review based, with around half the editorial covering Public Domain, Shareware and all the other associated forms of "near-free" software. Adam Waring, the magazine-to-be's editor, comments: "People's perception of Public Domain and Shareware software is that it's of low quality and cannot rival commercially available software. In many cases, they're absolutely right - but there are plenty of truly excellent programs out there, available for little more than the price of a disk. It's only through comprehensive reviews - and we'll have plenty - that people can be made aware of the worth of a package, whether it's PD or whatever."

It's not all reviews, though. There will be plenty of features too, covering all aspects of the Public Domain scene. The more complicated PD programs will be explained in detail, with walk-throughs giving step-by-step instructions on how to get the best out of your software.

In order to raise the public's perception of PD and Shareware software, *Public Domain* is to be a high-prominence title. It will be full-colour throughout and will run to well over 100 pages. The magazine is to be bi-monthly and the first issue goes on sale on Thursday 3 October at a newsagent near you!

NEW! YOUR ESSENTIAL GUIDE TO PD AND SHAREWARE
PACKED WITH EVERYTHING YOU NEED TO KNOW

HOW TO GET THE MOST FROM A PD LIBRARY
20 ESSENTIAL RULES FOR SMART BUYING... PAGE 16

REVEALED! THE TRUTH ABOUT PD AND SHAREWARE... PAGE 22

SHOPPING BY PHONE... PD FOR THE COST OF A CALL... TURN TO PAGE 28

OVER 300 PD LIBRARY KIT WORTH OVER £2,000
PROGRAMS REVIEWED... PAGE 71

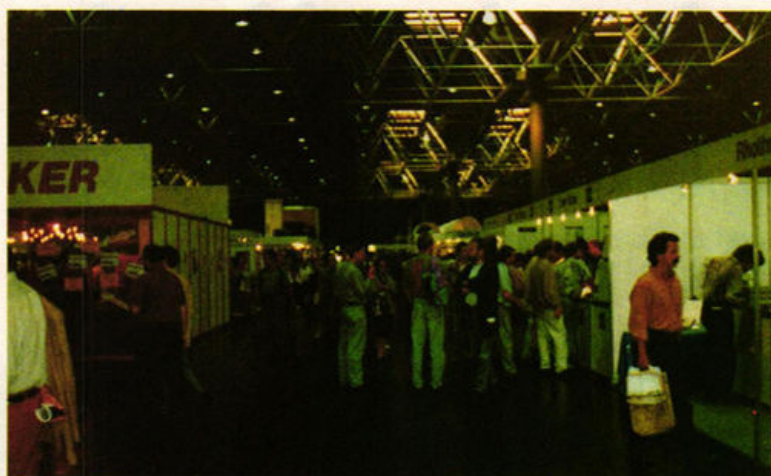
FULL DETAILS OF DISK ON PAGE 15

● Always turn to ST's Public Sector pages for news of cheap software? Then watch out for a new magazine full of it!

Gratuitous cheese-cake of the month



● Seikosha, the printer company, certainly win our prize for most gratuitous publicity shot at the Dusseldorf show. Quite what leather clad ladies with long flowing tresses have to do with modems, we don't know.



● They take the ST very seriously in Germany – as any PD enthusiast can tell you, the Germans produce more “serious” ST applications than anybody – and the Atari show at Dusseldorf is one of the big events of the calendar. Atari’s own stand was a sprawling affair that owed much to the Motor Show school of acre coverage.

Multi-tasking on the ST is a reality

ST owners needn't be envious of TT owners' getting a multi-tasking TOS (see main story, page 7), because a new program has been released which enables any ST owner to switch quite happily between different tasks running in memory.

MultiGEM is a German package being distributed in this country by Scotsoft. It can run on any ST, colour or mono. The only problem inherent with the system is that obviously you need lots of memory to run lots of different applications. The better DTP packages take up about 0.5MByte of memory, so you get far more use out of the program with a 2MByte or 4MByte upgrade.

MultiGEM runs as a background task, keeping tabs on each program and enabling the user to “hot key” (switch) into each of the different applications. Thus, if you've got a notebook Desk Accessory you can cut and paste text or graphics from program to program without saving them and quitting the previous application. MultiGEM costs £99 from Scotsoft International, 47 Auchingane, The Tryst, Edinburgh.

UK 2, Rest of the World 0

(Strangled Alastair Burnett voice:) and finally, here we go, here we go, ermm, go

If you thought the Dusseldorf Atari show was all about computers and wonderful new wibbly things to insert into your ST's disk drive, then read on. During the course of the show, Atari played their very own European Cup football tournament, appropriately titled the “Sam Tramiel European Cup,” with each of Atari's five

European subsidiaries fielding 11 of its own Gazzas / Maradonnas / Tramiels.

The plucky UK side's first match was against the Benelux team, which had earlier beaten Scandinavia 5-0. After the UK team had been trailing one goal down for most of the game, Team Manager Darryl “Darryl” Still brought himself on as a substitute, scored the equaliser and the game ended in a draw. This

meant that the UK needed to beat Scandinavia by five goals to qualify for the final. They promptly thrashed the Scandinavians 8-0, so that a final between the French and UK sides was in the offing as our Chunnel chums beat the Germans 6-0.

The final was a gripping affair, with the English side giving the French a right royal 2-0 bashing, thanks mainly to skill of Herpal Nijjer in midfield and Iain Fraser. After the match the UK side continued their celebrations in downtown Dusseldorf and continued to drink the continental chaps right under the Tafel.

ST Mouse Stick: The Ratings say it all!

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air combat
sequence

Strategy mode
and screen with
3D Hexboard



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SOUND EFFECTS FOR GAME
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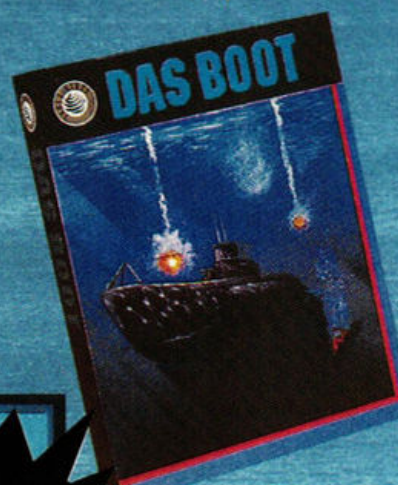
- 3D submarine warfare: For the first time, a sub warfare game lets you deal with threats below and above the surface in a true three dimensional environment.
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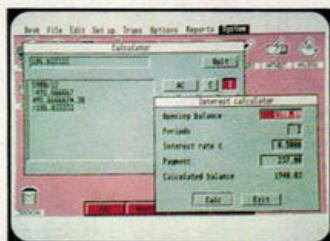
Some of you wanted more graphics so we added pie charts, scatter and line graphs. We thought we'd better smarten up the bar graphs, so we added 3D effects, stacking and overlaying, and we made sure you can print them.

Many of you wanted to calculate mortgage rate changes, loan repayments, retirement planning and so on. So we added a pop-up calculator and interest calculator. There's also an option to take account of inflation.

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Then, our technical people added a little...

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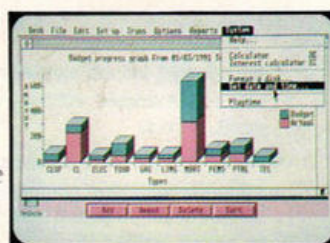


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Previews

A wiser man than us once said: "Tutti fruity alrooti, tutti fruity, tutti fruity alrooti."

But then he'd probably never seen *FORMAT's* previews of up-and-coming games

ADVENTURE WITH A VENGEANCE



● Listen up, Ratpouch, I'd like you to nip into that chemist's behind us and buy me a packet of herbal teabags. When the shop assistant asks you if you'd like anything for the weekend, smile and say "Only if they come in packets of three."

It seems that quality does count for something. These days, it's the depth of gameplay in the latest software which lures the punters, not the depth of the box. This is proved by the success of titles like *Powermonger*, *F-19* or *Sim City*.

Revolution Software are a new company who have decided that quality in their games is what will make them sell. So for their first title, *Vengeance*, they have produced a graphic adventure which they believe will impress fans of Lucasfilm and Delphine games.

Vengeance is set in what Tony War-riner, one of the programmers, calls "Dungeons and Dragons land" – which you can take as meaning the Dark Ages. Sounds like wizards, princesses, goblins, jesters, monks and forboding castles aplenty!

The game has been developed using Revolution's own "Virtual Theatre" system, which offers some pretty groovy features, though all of these

functions may or may not be fully implemented in the first game.

- The gameworld carries on, whether the main character is in action or not. For example, if you stand still in the town square, characters stroll on and off the screen en route to specific places to perform specific actions.

- Complex commands can be entered by means of pop-up menus. These replace the traditional adventure parser. In addition, other characters can be told to perform certain functions while the main player's character is off doing something else.

- All characters have their own individual characteristics. Thus, for example, if you insult people and then return to them later, they may or may not decide to speak to you. What's more, the ST-controlled characters talk to each other – offend someone and he might tell his friends!

- Besides being able to talk with other characters, you can eavesdrop on

conversations. So if two people are chatting in the town square you can sidle up and pick up some interesting snippets of information.

Charles Cecil, Revolution's Managing Director, has ten years' experience of designing computer games and it was he who thought up the Virtual Theatre system. He told *ST FORMAT* that the game only runs on 1MByte machines, mainly because the guys didn't want to compromise their programming by dropping certain features.

What you can expect to see is over 50 detailed rooms, each offering different puzzles and character interactions, fighting scenes, heaps of samples (like *Powermonger*), loads of save game positions and a fair old pinch of humour.

Vengeance is due to be released around Christmas on the Mirrorsoft label, giving you plenty of time to whack in that RAM upgrade to be able to use it. Oh yes, and one final thing. When you do eventually buy the game, try not to annoy Ratpouch, who you find in jail – he's a useful chappie.



● Is old Silas mad? Who is the mystery monk in the doorway? Where did he get his wonderful habit from? Why has Ratpouch got such groovy footwear? These questions, and many others, completely ignored in the next thrilling installment of So... er, *Previews*.



● Oh right, so this poor geezer, hanging from a slimy dungeon wall by his wrists (and they only turned him the right way round last week) is really likely to tell you how to get out of the jail!

VROOM WITH A VIEW

Isn't it embarrassing when software houses come up with ridiculous names for games? We thought we'd heard the worst with last issue's *Armour Geddon* and *Snott*. But no. Just imagine walking into Boots and asking, "Er, have you got Vroom?" You'd expect the assistant to say, "Vroom for what?"

Unfortunately *Vroom* is actually the name of Lankhor's upcoming driving



● *Vroom*, Lankhor's new driving game, was originally going to be called "Vroom Vroom! Brrrrr Rrrrrrrr Eeeeeeeeee! Screeeeeee Nyawwwwwww Brrrrrrrr" but for obvious reasons it had to be changed – it wasn't nearly silly enough.

game, distributed in this country by UBI Soft. Surprisingly, it was first advertised as long ago as the first issue of this august journal's late lamented predecessor, *ST Amiga Format*, back in July 1988 (as, incidentally, was *Maupiti Island*, reviewed last ish) – a case of a reincarnated proggy, or just a huge development time?

From the demo, *Vroom* (wince) looks like being something special, if just because of the graphics. The track shifts at a phenomenal rate without losing too much detail, and there's no apparent loss of resolution as the trees and so on hurtle towards you. The other cars are well-detailed and the sound, so often a letdown in race games, is reassuringly realistic. All the usual options are offered – practice laps, qualifying rounds and the like – but of course the crucial thing is whether the game can keep you interested after you've circumnavigated the track several hundred times.

On first impressions the game looks to be a corker, but with the flood of driving games about to be released – Microprose's *Grand Prix Simulator* looking to be something special, too – it may have a hard time competing. *Vroom* is due at the end of the month, so look for our review next ish.

NO TIME TO CHAT, WE'RE IN IT FOR THE MONEY

As reported in *FORMAT* 24, *Damocles 2/Mercenary 3* is about to show its face. Since it was the original's 3D engine, not the puzzles, that took time to develop and write, the sequel has taken nowhere near so long to get together but promises to be every bit as good.

The main difference is the host of extra characters you can interact with – they're virtually sprouting from the walls: taxi drivers, casino owners and a geezer called PC Bil (yes, one L), from the original *Mercenary*. The other difference is that you're now incredibly rich, having saved Eris in *Damocles*, so you can afford to do all those things you simply couldn't previously, like whiling away your hours in a casino at a million credits a throw. Watch out for next month's in-depth preview!



● In the time-honoured fashion of intergalactic taxi drivers, the esteemed ambassador of the Eris Black Cab fleet politely enquires as to the object of your journey, while simultaneously putting the meter forward a couple of hours. (Note: the Editor would like to point out that this is an Erissian taxi driver and bears absolutely no resemblance at all to those on Earth, honest.)

GREMLINS TAKE ON A TURKEY

It's nice to see Gremlin taking the film licence race less than seriously. They've signed what is generally regarded as the worst film ever made, *Plan 9 from Outer Space*, which stars Bela Lugosi just before and after he died.

You don't have to sit through the film itself to know

● Having failed eight times, the aliens decide to try *Plan 9 from Outer Space*. But can you spot the odd person out in this picture? That's right – that bloke in the middle has some very odd hair and is wearing lipstick. Next month – How to Kill Lice with Biting Wit Alone



the storyline (such as it is) – the game comes with a video containing edited highlights and a guide. You see, this alien race, who have tried and failed to conquer Planet Earth eight previous times, come up with the devious *Plan 9*. This involves resurrecting recently deceased persons to make them stumble around with their arms outstretched. Brilliant!

But seriously, folks, the game is expected to be a huge arcade adventure with many digitised sequences from the film – but let's hope without the film's terrible ennui, else legions of people will be dropping off in front of their ST screens.

Programmed by Pixel Productions (ex-Cinemaware), *Plan 9 from Outer Space* – the game – is due in April 1992, so don't cease your respiratory functions waiting for it.

IN PRODUCTION

● Rainbird have finally announced the imminent release of a planet editor for *Universal Military Simulator 2*, promised – as you may (or may not) remember – over six months ago. The editor enables *UMS2* players to build entire globes chock full of landscapes, sea, cities and climates. Nations can be armed with all grades of weapons, from primitive to nuclear age, and alliances can be set up, so that when you get down to what you came here for – fighting – things can get really interesting. The utility is completely menu driven and uses the block system of the original game for ease of construction. Two extra scenarios are provided with the editor – South East Asia 1946-1964 and the Pacific during World War Two – but unfortunately it only works on 1MByte STs.

● *Populous 2* is almost here. It's currently being playtested – see our preview on page 40 for an exclusive low-down. *Populous* was the most successful title ever for the ST – Electronic Arts claim it sold 800,000 units across all formats, including consoles – and it's about to be released on EA's Star Performer range for just £10.99, along with *Magic Fly* and *The Immortal*, both *FORMAT* Gold titles. You've just got time for some practice before *Pop 2*.

● Gremlin's budget label GBH has signed a deal with Millennium to release ten of their titles. Already available are *Cloud Kingdoms* and *Kid Gloves*, to be followed later by *James Pond*, *Thunderstrike* and even (we hope) the *FORMAT* Gold *Resolution 101*. If these sell well (and they should) the agreement will extend to every Millennium title released, so you'll eventually be seeing the as-yet-unreleased *Robocod*, *Cybermetics* and *Robin Hood*.

A WILD OCEANIC ELVISH SORT OF DO

Among Ocean's stream of arcade conversions and film tie-ins comes one of their all-too-occasional original titles, *Wild Wheels*. The game is basically a simplified version of football played with cars and a bloomin' great orb thing. Starting off with the lowliest, most pathetic racer you can get, you pootle around the playing field trying to attract this orb (it's electromagnetic, you see). Score enough goals, by thwanging the orb over the appropriate area, and eventually you win a game. With the bonuses and credits you earn you can afford a better, faster and altogether sexier model of car to smash the opposition with. And that's all there is to it.

From the demo we've seen, the game appears to be good fun, combining the excitement of screaming round in a souped-up racer with the tactical element of trying to score goals. It may start a new trend of combining popular sports styles – how about cricket mixed with clay pigeon shooting?

There are plenty of other titles on the go, but you're unlikely to see many of them until much nearer Christmas. The biggie is, of course, *The Simpsons*, which is sure to sell like particularly warm confections even if it's more pathetic than *Plaza Patrol*.

Other largish titles are *Hudson Hawk* and *Elf*. *Hawk*, being programmed by Special FX, looks more than a little similar to *Rick Dangerous* at first glance, featuring lots of small, well-animated and humorous graphics in a platform game with many separate elements. It looks like the finished game will be massive: there are around four stages to each level and nine levels (set in various scenes from the film) to complete. Ocean must be disappointed that the film did so badly; they undoubtedly hoped it would emulate the phenomenal success of *Batman* and thus help push the game.

Elf is an airy-fairy arcade adventure full of twee creatures and ethereal backgrounds. The difference with this one is that the nasties are supposed to have the ability to become more intelligent as you progress, much like those in *Gods*, and you have some degree of control over the obstacles in your way. That doesn't necessarily help you, though – it just means you can get lost more easily. Can't wait.



● The *Wild Wheels* players, to their amazement, discover the huge grey walnut that has invaded the playing pitch. But it's not in fact this that they're most worried about – what's making them sweat is the equally-big nutcracker that's not far behind...

LET US PREY

Those of you with greying hair and arthritic legs might well remember when *Birds of Prey* was first announced. It's a stonkingly huge, incredibly brilliant and wonderful flight simulator. At least, it had better be: it's been in development for over four years – or ten man-years, which certainly sounds a long time. The programmers, Argonaut Software, were the bods behind *Starglider 2* and – um, that's about all, really. The thing is, they take so darn long to write the things that it's strictly a one-game-every-five-years policy. However, *Birds* is now being debugged, so expect it – oh, sometime around 1994. In the meantime, watch for our extensive preview very soon. *stf*



● That zany Argonaut crew in weak-link-to-game-title photo opportunity. From left to right: Rick Clucas, Ian Crowther, Adam Polanski, Chris Humphries, Giles Goddard, Danny Emmett, Pete Warnes and Jez San. And don't forget Harold "The Hawk" Hawk!

BARGAIN HUNTER



YOUR MISSION

- ▶ This game's a doddle. Even for the inexperienced player.
- ▶ Simply track down the thousands of computer games equipment bargains at the Christmas Computer Shopper Show at Wembley.
- ▶ Select transport option: train (BR Wembley Central) tube (Wembley Park: Jubilee and Metropolitan lines) bus or car (ample parking).
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The ST is just

The Atari ST is the perfect introduction to the world of computing. The power of the ST allows you to run "serious" applications as well as playing games, and the ST system is flexible enough to allow you to expand as you develop your interests and expertise in different applications.

With so much diversity and power it is easy to see why the Atari ST family is one of the most successful ranges of computers in the world. But best of all is the built-in growth potential. The 520ST user of today is the TT user of tomorrow; beginning with games or a simple word processor, anyone can learn about computers and gradually acquire the skills of the professional computer user. And unlike many other systems, an Atari upgrade is not wasteful. Much of the software available for the 520ST will run on both the Mega STe and the TT systems. With an Atari an upgrade means that you can add new capabilities and expand your computing horizons without losing everything you have acquired along the way.

If you thought that computers were all about playing games you've been missing out on the real potential that you and your computer have. To find out more about either the **Atari ST** or peripherals for any applications simply fill in the coupon and send it to Atari at the address below.



Whether you are looking for a leisure computer, an educational computer, a computer for all the family or a powerful business system, look no further than the **Atari ST Range**.

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The **Atari 520ST** is an easy way for you and your family to learn about computers while having a great deal of fun. This best-selling computer has an impressive range of features that fit many requirements at home or in the office. A generous 512K RAM memory is included as standard - enough to run large spreadsheets and databases as well as the latest generation of computer games. There are plenty of expansion ports available for printers, modems, monitors and hard disk, and other peripherals allowing you to increase the power and flexibility of your system as needed. MIDI expansion ports are fitted as standard. MIDI (Musical Instrument Digital Interface) is the music industry standard interface that allows you to control both recording and playback of synthesisers and other digital instruments with your computer.

There is no other computer range in the UK that can offer its users such a wide variety of software support, ranging from educational learning programs to 16-bit computer games to professional quality desktop publishing packages.

The ATARI ST

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he beginning

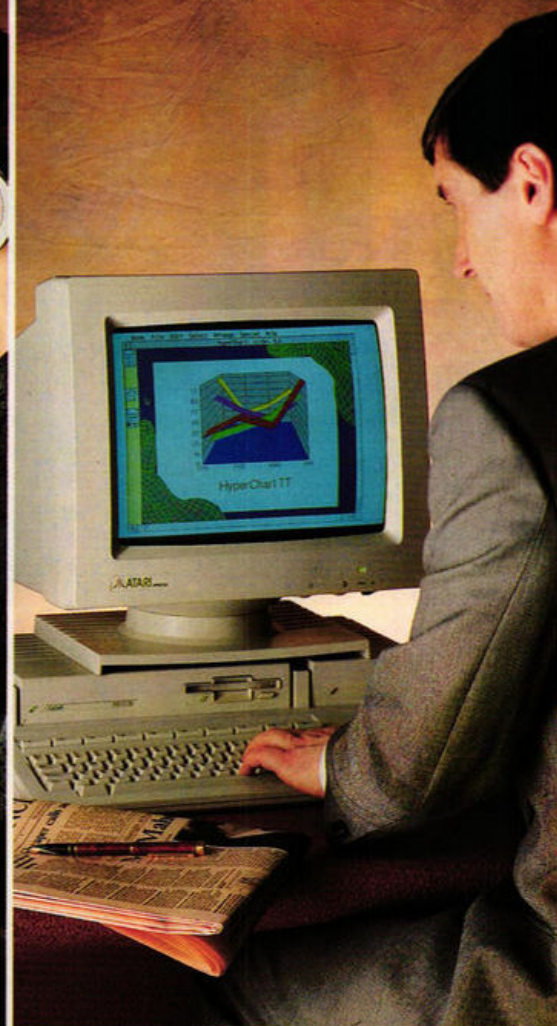


The power of the new **Mega STe** range makes it a serious contender for those who are after power computing. It is an ideal machine for the student or computer enthusiast who wants to run memory intensive applications such as Computer Aided Design (CAD) or graphics applications. The Mega STe features separate keyboard and central processor with a 1MB floppy disk drive and a 50MB Hard Drive for data storage. The Mega STe features a fast 16MHz operating speed, which can be switched to 8MHz to run any programs developed for the 520ST, making it even easier for you to upgrade.

For those of you who want to run a 'home office' with separate files for word processing, spreadsheets and accounts packages the Mega STe - with its vast amount of built-in hard disk storage - is an excellent choice. For those running graphics intensive programs the faster operating speed will make the Mega STe a much more productive machine. The Mega STe also features an extensive range of expansion ports that allow you to add even more power and capability to your system.



The portable **Atari Stacy** is completely compatible with all monochrome ST programs, but allows for complete portability. It features a supertwist backlit LCD mono screen, split horizontally and has all the standard ST ports. It is available in various configurations, with Hard disk as standard. It weighs approximately 15.2 pounds and has its own carrying handle making it easy to transfer from place to place. Because the ST, with its MIDI interface has become the accepted standard in the music industry, the Stacy is a boon machine for musicians with a busy schedule. Songs and sequences written at home can be stored on the built-in hard disk, then the whole computer can be easily transported to the studio or gig, with minimum stress, they can even be worked upon and improved on the road. Although it is the most specialist member of the ST family, the Stacy is still versatile enough to be used for all serious ST applications.

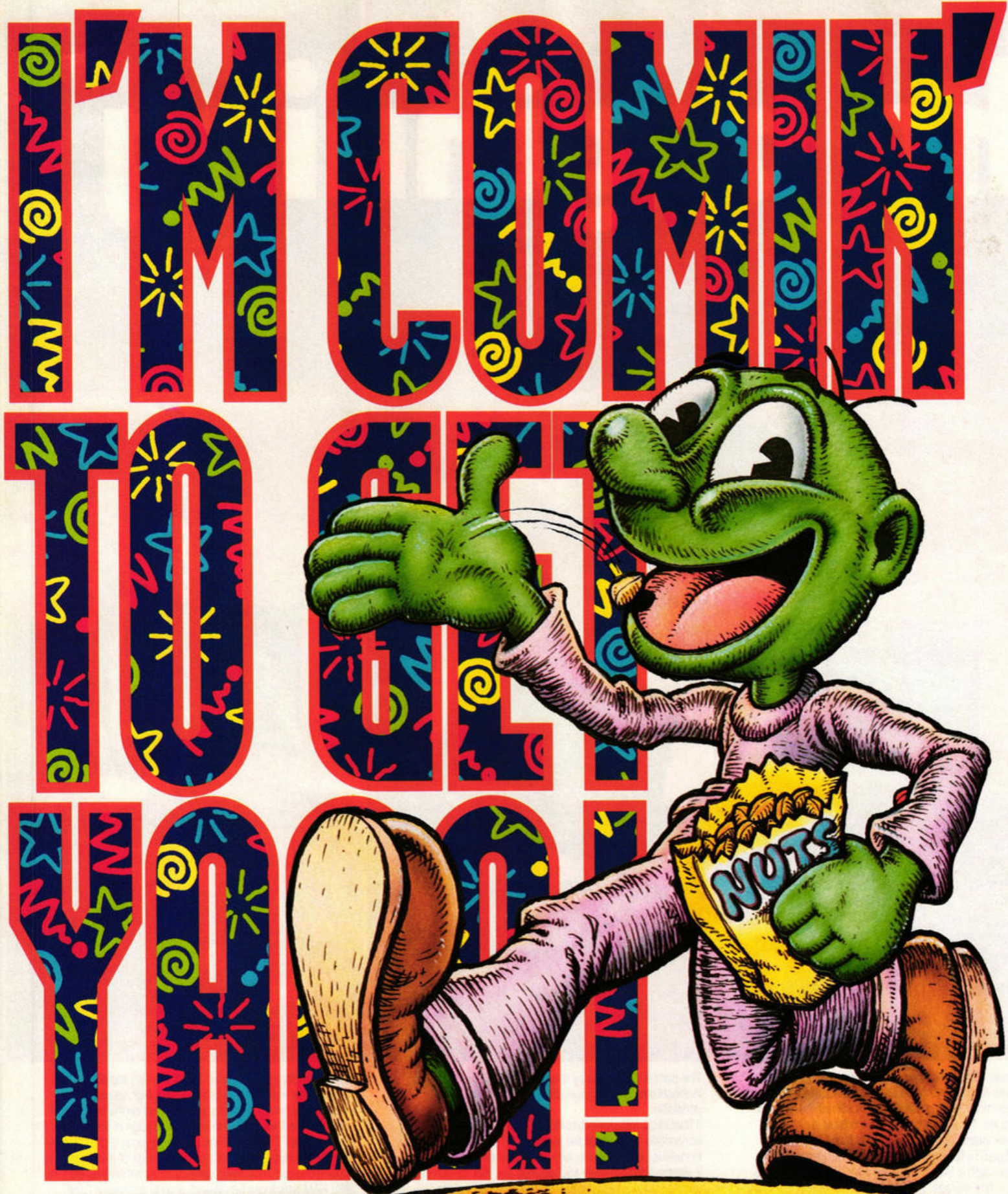


The incredibly powerful **Atari TT**, at the very top of the Atari range, is the first in a new generation of high specification professional personal workstations based on the successful Atari ST standard. Similar in style and design to the Mega STe, the Atari TT features a separate keyboard, 1MB floppy disk, 50 MB Hard Drive and the same range of excellent expansion ports. The basic model comes configured with 2MB RAM which can be expanded up to a massive 26MB. With a Motorola 68030 central processor, the TT runs at up to 32MHz. But speed and power are not all the TT system offers the professional user. Six standard built-in screen resolution modes mean that there is always one suitable for the purpose that you have in mind. For animation or computer graphics, choose from a palette of over 4,000 colours with the ability to display 256 on screen at any one time, and the exceptional 1280 x 960 pixel high resolution mode is one of the best screen modes available at any price.

- More than just great games



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ST Charts

"We can't all be heroes, because somebody has to sit on the kerb and clap as they go by." – Will Rogers.



● **FORMAT** Gold winner *Flames of Freedom* (AKA *Midwinter 2*) shoots into top spot in its second week in the charts.



● *Hero Quest's* Arthur the Barbarian says: "It's nice being at number 4, but I can't help feeling I'm being watched."

ST CHART CHAT

Let's do the time warp again! The charts we got from Gallup this month showed *Manchester United Europe* at number two and *Railroad Tycoon* at number five – odd, since these games haven't actually been released on the ST yet. Gallup offered the excuse that their computer got its barcodes mixed up and mistakenly registered the PC versions of these games as ST sales! Makes you a bit more suspicious of those barcode checkouts in supermarkets, doesn't it?

As usual, budget titles are actually outselling the full-price games – this month, the top six in the budget chart beat all comers. Definite pattern in the chart at the moment, though: the vast majority of the games are a cut above average. Something to while away the long summer evenings, perhaps? Anyway, nice to see *Flames of Freedom* in the top spot. Quality does count.

CHARTBUSTERS – WIN ANY GAME FROM THE TOP 30!

This has got to be a first. Someone actually predicted all the top three correctly. Step forward, **Barry Harmon** of **Kent**, you've bagged yourself a copy of *Flames of Freedom* (nice choice). Now, if you think you can predict next month's top three, bung your choices on a card, along with the month you're predicting for, the game from the charts which you'd like to win and (in case of a tie-break) your favourite ice cream flavour of all time. Then send the card to: Chartbusters, *ST FORMAT*, 29 Monmouth Street, Bath, Avon BA1 2DL. Nearest entry wins, employees of Future and their relatives may not enter, and multiple entries will be placed in a vat of tea bags until they turn into moths. Newcomers to consider: *Magic Pockets* and *Microprose Golf*.

ST BUDGET TOP TEN

1	↔	Lombard RAC Rally Hit Squad
2	↑	Fantasy World Dizzy Code Masters
3	NE	TV Sports Football Mirror Image
4	↓	Ninja Rabbits Micro Value
5	↑	Little Puff Code Masters
6	NE	Pro Boxing Code Masters
7	↓	Xenon 2 Mirror Image
8	↓	North and South Digital Integration
9	NE	Supercars GBH
10	RE	Treasure Island Dizzy Code Masters

Last Year's Top Ten

1	↔	F19 Stealth Fighter Microprose	£29.99
2	↑	Shadow Warriors Ocean	£24.99
3	↓	Kick Off 2 Anco	£24.99
4	↑	Battle of Britain US Gold	£29.99
5	NE	Operation Stealth US Gold	£24.99
6	NE	Battle Master PSS	£24.99
7	NE	Back to the future 2 Mirrorsoft	£24.99
8	NE	BSS Jane Seymour Gremlin Graphics	£24.99
9	NE	Oriental Games Microstyle	£24.99
10	NE	Shadow of the Beast Psygnosis	£34.95

1	↑	FLAMES OF FREEDOM ■ Rainbird	■ £29.99	■ STF 26: 92%
2	↔	LEMMINGS ■ Psygnosis	■ £25.95	■ STF 24: 94%
3	↑	GODS ■ Renegade/Mindscape	■ £25.55	■ STF 22: 92%
4	↓	HERO QUEST ■ Gremlin Graphics	■ £25.99	■ STF 24: 78%
5	NE	RAINBOW COLLECTION ■ Ocean	■ £19.99	■ STF 82%
6	NE	ROBIN SMITH'S CRICKET ■ Challenge	■ £25.99	■ STF 44%
7	↑	TEENAGE MUTANT HERO TURTLES ■ Mirrorsoft	■ £24.99	■ STF 19: 38%
8	↓	ARMOUR GEDDON ■ Psygnosis	■ £25.99	■ STF 26: 91%
9	NE	F15 STRIKE EAGLE 2 ■ Microprose	■ £24.95	■ STF 26: 90%
10	↑	SUPER MONACO GRAND PRIX ■ US Gold	■ £25.53	■ STF 21: 71%
11	↑	MONKEY ISLAND ■ US Gold	■ £29.99	■ STF 23: 94%
12	↓	LIFE AND DEATH ■ Mindscape	■ £25.53	■ STF 26: 72%
13	↓	PRO TENNIS TOUR 2 ■ UbiSoft	■ £24.99	■ STF 24: 73%
14	↑	SUPERCARS 2 ■ Gremlin Graphics	■ £19.99	■ STF 24: 74%
15	NE	VIRTUAL REALITY 1 ■ Elite	■ £29.99	■ STF 70%
16	↓	SPEEDBALL 2 ■ Mirrorsoft	■ £24.99	■ STF 18: 88%
17	↑	SIM CITY/POPULOUS ■ Infogrames	■ £29.99	■ STF 12: 92% ■ STF 10: 92%
18	↓	KICK OFF 2 ■ Anco	■ £24.99	■ STF 14: 92%
19	RE	WONDERLAND ■ Virgin	■ £30.84	■ STF 24 85%
20	↑	VIZ ■ Virgin	■ £19.99	■ STF 21 74%
21	NE	FLIGHT OF THE INTRUDER ■ Mirrorsoft		
22	↓	FINAL WHISTLE ■ Anco		
23	↓	CHUCK ROCK ■ Core Design		
24	↓	POWERMONGER ■ Electronic Arts		
25	↓	TOKI ■ Ocean		
26	↔	ATOMIC ROBOKID ■ Activision		
27	RE	CYBERCON 3 ■ US Gold		
28	RE	BRAT ■ Mirrorsoft		
29	↓	F19 STEALTH FIGHTER ■ Microprose		
30	RE	SUPREMACY ■ Virgin		

Main charts: ↑ = up, ↓ = down, NE = new entry, RE = re-entry. STF = issue and score of review in *ST FORMAT*. charts are compiled and supplied by Gallup. © 1991 European Leisure Software Publishers Association Ltd

LOAD IT!

LORDY IT'S A BIG 'UN, INNIT?

This month there are no less than nine programs for you to experiment with, play or generally go ga-ga over. Crammed into the little spaces on your Cover Disk you'll find enough data to keep you busy until the next action-packed Cover Disk hits the streets in a month's time. Where else can you get so much?

OFFSIDE, REF! OFFSIDE!

Everybody's heard the horror stories, but no-one had the solution. Until now. **ST FORMAT** is the only magazine which caters for both single and double-sided drive owners. With our Cover Disk, you know you can always read at least the first side, no matter what type of ST you have, what age it is or where you got it! Now is that egalitarian, or what?

A DISK TOO FAR...

It seemed an impossible problem. How can two types of drive read entirely different data from the same disk? Rob Northen was the disk duplicating supremo who finally conquered the hardships, sold himself to medical and disk science and came up with the stunningly named **ST FORMAT** format. With this, everyone had total access to the world's greatest Cover Disk.

DOES IT WORK?

If you own a double-sided ST then you won't even notice the disk magic being performed. That's intentional! You'll find everything which is stored on the flipside of the Disk stashed away in the folder called Side_2. If you can open this then you haven't got a care in the world. Just get in and get playing.

I CAN'T GET IN!

If you try to open the Side_2 folder and get a rude message telling you about damaged data, don't worry. Your ST is just telling you in its own subtle way that it's only got one side on its drive, and have you thought about upgrading? Just click on "OK" and you can still access the folders on Side 1 as normal.

TAKE TIME TO BE SAFE

Whatever your ST setup, you can't afford to take risks. **FORMAT's** Cover Disk is guaranteed virus-free – our duplication master disks are tested personally by the Tech Ed himself. But this doesn't make it fireproof. If the write-protect tab on the disk is left enabled (closed), then viruses can gain access to the disk. Protect your Cover Disk as soon as you buy it, by opening the tab and backing it up. It's the only way to be absolutely sure you're safe!

What's on this month's all-action Cover Disk? Neil Jackson is your guide.

Cover Disk 27



ON THE DISK THIS MONTH

SIDE 1

ROLLING RONNIE – Roller skating madness in a fully-playable demo from Virgin Games

ST WRITER ELITE VERSION 4 – The best Public Domain word processor there is

SHOWMEM Version 4 – Find out where your memory's gone

N_SYSCOM – Watch your ST's secret instructions as they run

SIDE 2

ST TOOLS – Control your files with this box of directory tricks

SPIRO – Put your pens and plastic wheels away! Use this Spiral Pattern Generator instead

GEMVIEW – The ST's all-encompassing picture viewer for mono monitors

SYMOM – Intercept your ST while it works. Find out what's really happening

CLOCKSET – Lost track of time? Get your clockwatching in time with reality

Rolling Ronny

BY: VIRGIN GAMES

SIDE: 1

MACHINE: ALL COLOUR STs

RESOLUTION: LOW ONLY

FOLDER: ROLLING.RON

FILES: RR.PR.G, A.DAT, B.DAT, C.DAT

GET STARTED WITH: RR.PR.G

Welcome to *Rolling Ronny*, the Virgin game with wheel appeal, created by Virgin's German developers, Starbyte. Now's your chance to make a great skate or fumble and flounder. Join Ronny on his trail across town, on his mission of derring-do and doing good. Can today's errand boy be



tomorrow's superhero? Load it and find out...

Ronny is like most other dudes: normal. Except for his feet. Ronny is never seen in public without his wheels on. He spends his days wandering around town, aiding passers-by and collecting the trinkets he finds littered around the pavements, trying to gather enough cash to catch the next bus.

Today, *Rolling Ronny* has a problem. There's been a theft at Fieldington's Exhibition Hall. A jewel thief has made light on his toes and scarpered with a collection of top-price sparklies. Can Ronny make it to Scotland Yard to notify his old mate Inspector Cuff and pick up the scattered gems along the way? 'S down t'you, really!

The rules of the game are simple. Don't get hit by anything, 'cos that costs you energy. Energy is displayed as a row of hearts which lose their colour

when they're expended. Above the energy bar is the fruit-flinging fire-o-meter which gives an idea of the number of shots you've got left. "Shots?" you say. Yes, but they're just bits of pureed fruit – all good, clean, biodegradable stuff. Ronny uses



them to stop some baddies and turn stars into coins for use on the bus.



With a joystick plugged into Port 1, push right when Ronny appears at the edge of the town. You can make him reverse by pushing in the opposite direction, or you can make him jump or duck by pushing up or down. The "Fire" button controls your use of fruit-fire.

As you pass the buildings, you notice there are small square boxes hanging by the windows or dangling from the gutters. These are the jewel boxes – just leap onto these to gather them up for a special pat on the head from Inspector Cuff. You can use the window ledges, gutters and canopies to clamber over. If you're lucky you may even find a ladder which you can climb by pushing up.

As you go, keep an eye on your timer. Spend too long dawdling and you miss the bus to the next level, letting the crook get away. If you've got free time (fat chance!), then look for extra ways of earning cash. Sometimes money just falls from the sky when you trigger a hidden bonus, but most of the time you have to earn it. That means shooting stars or other objects destined to hit you and turning them into coins.

If you're still brassic when you near the end, look for lost property to deliver (the exclamation sign), or a job to apply for. There's even a shop where you can

I JUST KEEP ROLLING ALONG



CLOSE-UP ON RONNY'S COLLECTABLES

All kinds of weird and wonderful items can be found lurking around in *Rolling Ronny*. Here's the most important



buy more time if you can afford it. If you find them, there are a number of extra-special items which you can use to speed up your task. You can recognise these objects by the way they appear in your main panel when you pick them up. They can be triggered by using the corresponding function key. Megahonks give you invulnerability, superjumps make you leap, stenchaliser shoes baddies and the magnetoflux attracts metal things towards you. Other special items to collect include bonuses to health and time. Check the panel to find

out what they look like. Then, get your skates on...! (It had to be said, didn't it?)

But finally, a word of warning. Look where you're going. Ronny can only skate on flat, dry surfaces, like pavements, roads and windowsills. He can't fly (though he can jump pretty well), nor can he skate on grass. You need to keep watching for pitfalls under your feet. Lose your balance and precious time and energy are lost forever as you're whisked up by the magic balloon. Press "Fire" to drop yourself down when you've repositioned yourself.



● *Rolling Ronny's* in-built help mode shows you what the meters are all for. Keep an eye on your time and your route and you might just have time to work it all out.

● Here's a taster of the start to *Rolling Ronny*. Watch out for the traffic by making sure you jump well clear of any oncoming cars. Standing on a windowsill may save you, but only if you're high enough up.



Silly Spiro Generator

BY: DAREK MIHOCCA

SIDE: 2

MACHINE: ALL STs

RESOLUTION: ALL RESOLUTIONS

FOLDER: SPIRO

FILES: SSG.PRg

GET STARTED WITH: SSG.PRg

Remember that strange drawing toy called Spiro-graph? You do? Well, Silly Spiral Generator is an up to date rethink of the same idea. By adjusting the radius of a circle or two and choosing a pen colour, you can make fascinating patterns on screen.

When you first load SSG.PRg, you see a dialogue box with several alterable fields. The two radii correspond to the size of the imaginary Spiro-graph wheels, while the Increment determines how straight the connecting lines become. You can change the colour of the ink on screen as well as join up the dots to make smooth, continuous patterns. When you've entered some stats for starters, hit Draw and watch as the pattern unfolds in front of your very eyes. You can pause the drawing using the Spacebar, or return to the dialogue screen by pressing <Esc>. When you return, you can select a whole new



● These are examples of the kind of patterns you can create using the Silly Spiro Generator on this month's Cover Disk

Clocksetter

BY: CODEHEAD SOFTWARE

SIDE: 2

MACHINE: ALL STs

RESOLUTION: ALL RESOLUTIONS

FOLDER: CLKSET

FILES: CLOCKSET.PRg, CLOCK-SET.TXT

GET STARTED WITH:

CLOCKSET.PRg

Clocksetter, not surprisingly, sets the internal clock inside your ST. If you have a battery backed-up clock, then *Clocksetter* reads and displays the current time when you run it. But if you don't have a clock, your ST defaults to the same date and time, every time you switch off. With *Clocksetter*, you can enter the correct time at boot-up, so that files and documents are saved with the correct time and date stamp.

Just copy *Clocksetter* into a folder named AUTO on your boot disk. Use this disk every time you start up your ST and *Clocksetter* runs automatically. All you need to do is enter a time and that's that! For more information, read the file CLOCKSET.TXT – just double-click on it and select SHOW (or PRINT to print it).



● *Silly Spiro Generator's* main display is where you adjust the two circles which combine to make the final pattern. The pattern draws continuously until you hit <Esc> (to exit) or Space (to pause)

range of statistics, and carry on drawing. The display only clears when you press the Clear button, so you can overlay all kinds of different patterns in various colours.

So say goodbye to your plastic wheels and smudged ink. The new age of technology is at hand. Let your ST do all the work while you take all the credit!

ST Tools

BY: STEPHEN CORNIO

SIDE: 2

MACHINE: ALL STs

RESOLUTION: MEDIUM & HIGH

FOLDER: TOOLS1

FILES: ST_TOOLS.PRG,

ST_TOOLS.RSC, ST_TOOLS.DOC

GET STARTED WITH: ST_TOOLS.PRG

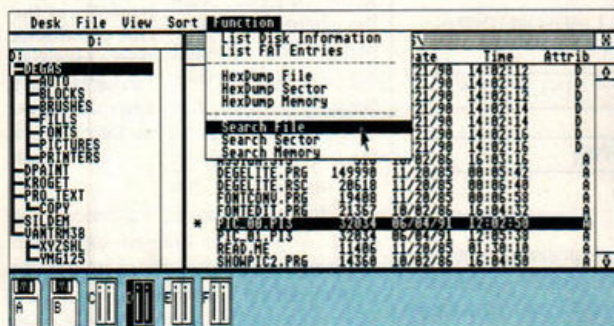
ST Tools is a shareware program, which means that if you use it and find it regularly helpful, you are honour-bound to make a donation to the programmer. Check out the panel opposite for details on how to contact him.

ST Tools' main display includes a directory tree and a listing of files by directory. As the name implies, the program is a set of tools for use on the Atari ST. It can list File Allocation Tables, Hex dump files, sectors or memory, as well as search files, sectors or memory. The program is entirely GEM based, with the standard drop-down menus, scrollable windows and dialogue boxes.

Disk icons representing each floppy disk and hard-drive partition as well as

the left window is active. To make the file window active, simply click in the right window or press the right arrow key. To return to the directory window, either click in the left window or press the left arrow key. To change the current directory when in the left or directory window, you can click on the desired directory or use the slider or use the up and down arrow keys. The same methods work to change the current file when the right or file window is active. Note that clicking on a file causes that file to be selected. This is indicated by an asterisk (*) in front of the file name. To deselect a file, simply click on the file a second time. Selected files are important whenever a file function is performed. If no files are selected, then the function starts at the current file and all files in the directory are accessible. If any files are selected, then only those files are accessible by the function, in the order that they were selected.

Normally the file window shows the filename, size, date, time of last modification and file attributes. Click on the full window button and the file window is expanded to cover the directory window and the first cluster and sector of the file is also displayed. Click again



● ST Tools is the very best in disk navigation. Don't get lost and find yourself stranded up the directory tree. Get ST Tools to guide you through

any RAMdisk are displayed across the bottom of the screen. The current disk is indicated by a highlighted icon. To make a different disk become the current disk, simply click on the desired icon.

The main display consists of two windows. The left window is a directory tree of the current floppy or hard-drive partition with the current directory indicated by a highlighted line. The right window is a list of files, including directories, found in the current directory, with the current file indicated by a highlighted line. When the program starts,

on the full window button to return to the normal size file window.

Across the top of the screen is a standard menu bar. All of the program's features and functions are accessed by using the drop-down menus contained on this menu bar.

Stashed away in the documentation file ST_TOOLS.DOC in the TOOLS1 folder you can find all the in-depth instructions required to get the most out of ST_TOOLS. Have a good read before attempting anything which may wipe data from disks. We cannot be responsible for disasters you cause!

SHAREWARE CONTRIBUTIONS

ST Tools is a shareware program, which means the programmer receives no money directly from software houses and pays for development himself. For this reason, if you use ST Tools regularly, you are honour-bound to make a small donation to the programmer. If you send around ten US dollars, you become a registered user and receive advance notification of further updates and improvements which get

made to the program. Here's the address:

Stephen Cornio
PO Box 1734
Woodbridge,
VA 22193,
United States

Don't just turn the page! Shareware is a risky business for programmers. Without your help, they won't keep writing good programs for next to nothing, will they?

Gemview

BY: DIETER FIEBELKORN

SIDE: 2

MACHINE: ALL STs

RESOLUTION: ALL RESOLUTIONS

(not low & med on TOS 1.2 machines)

FOLDER: GV

FILES: GEMVIEW.PRG, READ.ME

GET STARTED WITH: GEMVIEW.PRG

Gemview is an all-encompassing picture viewer program. It can load and display loads of different picture file formats regardless of resolution. For example, you can view Degas low res pictures on a monochrome high resolution screen, or check out Spectrum 512 colour images in medium resolution. Unfortunately there is a bug which prevents TOS 1.2 STs from running Gemview correctly in medium or low resolution, but it's okay in high resolution. STEs and TOS 1.4 machines work fine in any resolution.

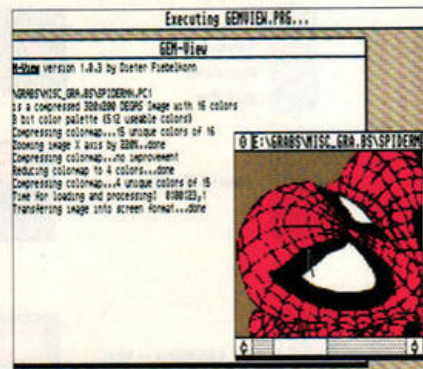
When you first load Gemview a dialogue box appears, followed by a file-selector window. Set the fileselector so that it can find your picture files and then choose one from your list. The fileselector disappears and the dialogue box shows that Gemview is working on the file. If the chosen picture is meant for a different resolution, Gemview attempts a compression of the colour palette, so that it can be displayed on-screen.

After a short time, a GEM window appears, containing your picture. You can move the window around, just like any other GEM window, or resize it using the drag icon in the corner.

Other operations are fairly intuitive. Pressing and holding the right mouse button inside the window causes the picture to be scrolled around directly under mouse control. Press and drag a rubberband box with the left button in the picture window to bring up a new dialogue box where you can change various elements of the picture or zoom

into part of it. You can even re-save the picture in the new resolution.

A few more details can be found in the file READ.ME which contains help from the programmer.



● Gemview can display virtually any picture, in any resolution. These three pictures show the same Spiderman shot in low, medium and high resolution.

A GALLERY OF FORMATS

GEMVIEW can display all these picture file formats:

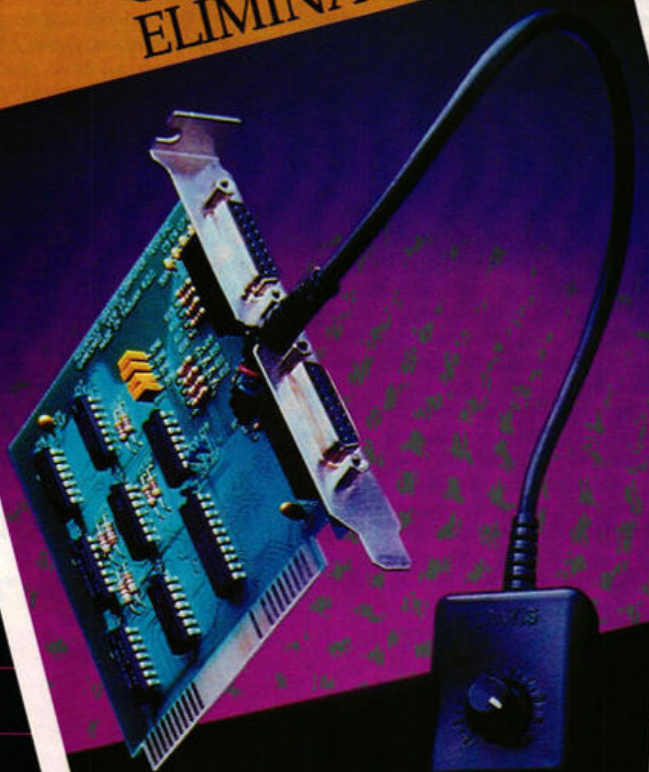
FILETYPE

DF Rasterfiles (Programmer's own format)
GIF Images
Sun Rasterfiles
STAD Images
IFF Imagefiles
GEM(X)Image Files
GEM-Metafiles (Vector)
Neochrome Rasterfiles
Art-Director Rasterfiles
Degas Images (also with a 4-bit colour palette) (compressed)
Tiny-Compressed Images (with a 4-bit colour palette)
Doodle Monochrome Rasters
Spectrum 512 Images (also with a 4-bit colour palette)
X Bitmap-File (a bitmap C-Source description)

FILE EXTENSION

*.PDF
*.GIF
*.SUN
*.PAC
*.IFF
*.IMG
*.GEM
*.NEO
*.ART
*.PI1, *.PI2, *.PI3
*.PC1, *.PC2, *.PC3
*.TN1, *.TN2, *.TN3, *.TNY
*.DOO [640x...]
*.SPU, *.SPC
*.XBM

GAME CARD™ ELIMINATOR

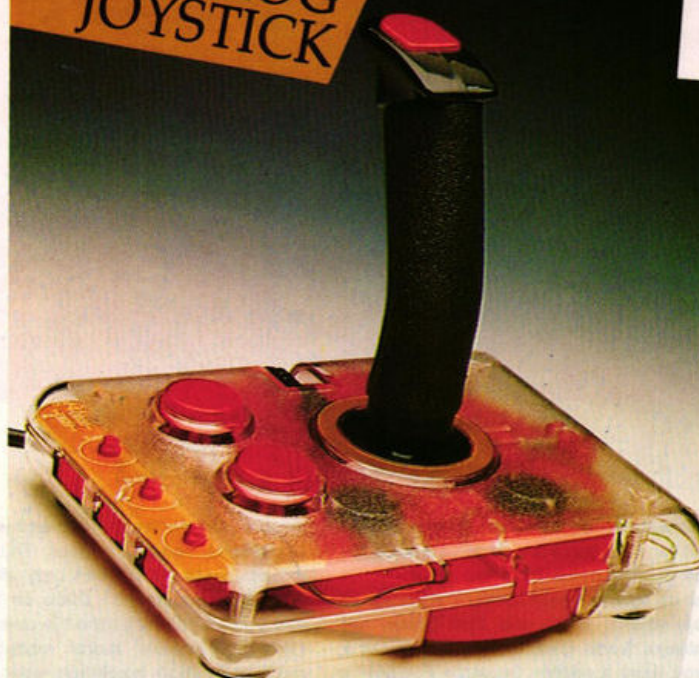


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ANALOG JOYSTICK



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The features are all very impressive but the real quality comes in the way the Gravis looks and how it responds to touch, in much the same way that the doors of an expensive car sort of click shut and the engine purrs into life, leaving the impression of controlled but vast power.

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SALES HOTLINE: 081 902 2211

SPECTRA
VIDEO

N_SYS_COM**BY:** NOUD VAN KRUYBERGEN**SIDE:** 1**MACHINE:** ALL MONO STs**RESOLUTION:** HIGH ONLY**FOLDER:** NSYSCOM**FILES:** NSYSCOM.ACC,
NSYSCOM.TXT**GET STARTED WITH:** NSYSCOM.ACC

(in your main directory)

With *N_SYS_COM* you can get a closer look at what your ST is doing. You can see all the GEMDOS, BIOS, XBIOS and GEM (AES and VDI) actions which your ST is processing, listed on screen.

N_SYS_COM.ACC runs as an Accessory in high resolution only. You can change its settings by clicking on the

"System Command" menu. You can choose between showing or not showing the system commands, so that *N_SYS_COM* can be constantly loaded but only enabled when you want it. You also decide the position on screen where you want the display to appear: "Top" means at the top of the screen, "Menu" means just under the menu bar and "Bottom" means at the bottom of the screen.

When you select a display line, your ST returns to normal, except for the fact that every time a GEMDOS or other system-level routine is called (when you open a window or use a menu, for example) you can see which routine is called. You can follow your ST through its day-to-day running and use this to learn more about the operating system itself. Read the .TXT file before you begin, and remember: high res only.

of the system's trap calls at one time or another, this can prove to be very valuable for debugging programs for which no source is available. It can also help to point out possible conflicts between existing programs and the one being tested.

SYSMON consists of two programs. *SYSMON.PRG* is the main program to run first. It installs itself in memory and then quits. *SYSMNCFG* is the configuration program. It can be run as either a program (with the .PRG filename extension) or as a Desk Accessory (with the .ACC extension). This is the program which sets up *SYSMON* and tells it which operating system functions to display and intercept. *SYSMNCFG* requires that its resource file (*SYSMNCFG.RSC*) is in the same location as wherever it is run from.

For detailed info on configuring and modifying *SYSMON*, read the file *SYSMON.TXT* – simply double-click on it.

SYSMON**BY:** GRIBNIF SOFTWARE**SIDE:** 2**MACHINE:** ALL STs**RESOLUTION:** MEDIUM & HIGH**FOLDER:** SYSMON**FILES:** SYSMNCFG.PRG, SYSMN-
CFG.RSC, SYSMON.PRG,
SYSMON.TXT**GET STARTED WITH:** SYSMON.PRG

SYSMON is a program similar to *N_SYS_COM*, but for colour ST owners too. Unlike *N_SYS_COM*, the display is a little untidy, but the functions are virtually identical. *SYSMON* can intercept all calls done through the CPU's trap vectors and display meaningful information about what parameters are being passed and what values are returned to the caller. Since all programs use one

BACK UP YOUR DISK!

Because the *ST FORMAT* Cover Disk is non-standard, the back-up procedure is not simple. Follow these steps, though, and you won't encounter any problems. Do it any other way and you could mangle your Cover Disk. And then where would you be?

1. Format a couple of blank disks (you may not get all the data onto one) – single-sided if you've got a single-sided drive, double-sided if you have a double-sided drive.

2. Write-protect (notch open) the original Cover Disk and insert it into the drive (if you have two drives, you lucky devil, insert the Cover Disk into drive B). Double-click on the drive B icon to open a window showing the Cover Disk contents. If you haven't got a second drive, a message appears requesting you to put disk B in drive A. Simply click on OK and carry on with this procedure.

3. Insert one of the blank formatted disks into drive A (removing the Cover Disk if you have only one drive). Double-click on the drive A icon and open up another window. You may be asked to

insert disk A in drive A – you already have, so just click on OK again.

4. Highlight each folder in the drive B Cover Disk window and drag them into the drive A window, one at a time.

5. If you have one drive, you're asked to insert disk A and disk B at regular intervals. Don't mix the two up! Disk B is the Cover Disk and disk A is the freshly formatted disk.

6. When you get a "disk full" error message, recopy the incomplete folder and any subsequent folders onto the second freshly formatted disk, using steps 3 and 4 above.

7. Double-sided owners, double-click on SIDE_2 once you've finished copying all the folders from side 1 of the Cover Disk. Copy the folders inside as you did in steps 3 and 4. When it's finished, use only the backup. Put your Cover Disk away safely.

8. Don't forget, you must not try to use the standard Atari disk copy function (dragging Floppy A onto Floppy B) to back up your Cover Disk – because of our special format, it won't work.

Skating on thin ice? Going in circles? You need...

COVER DISK HOTLINE
0225 442244
WEDNESDAYS (2pm to 6pm)

Having trouble with your Cover Disk? This is what you do. First, before you try anything else, please make sure you have thoroughly read all the relevant parts of these Cover Disk pages and all documentation files. If that doesn't solve your problem, try consulting your Atari ST Owner's Manual, which may help you find what you're doing wrong.

If all else fails, give us a buzz in the *ST FORMAT* offices during the hours specified and

we'll do our best to help. However, we don't write the Cover Disk programs ourselves, so we may not know everything the programmers do. Try to have your ST nearby (up and running), and let us know which model ST you have, plus the issue number of the Cover Disk that's giving you hassle. Do this before you call, and it might save you a large phone bill when we go tell you to go back and find out! And please: Cover Disk problems *only*.

THE DISK NEEDS YOU!

We need your software – games, utilities, demos – anything good, original and short. If you've written anything worthy of the *ST FORMAT* Cover Disk, send it with this form and full documentation to: Neil Jackson, *ST FORMAT* Cover Disk Editor, 30 Monmouth St, Bath, Avon BA1 2BW.

Name _____

Address _____

Daytime phone _____

Program title _____

Size of files in K _____

So why's it so flipping smart? _____

Don't forget to: ☐ Include on-disk and paper documentation ☐ Write your name and address on the disk ☐ Use a virus-free disk ☐ Keep a copy of your program, because contributions are non-returnable ☐ Enclose wads of cash

Please sign the following declaration: This program is submitted for publication in *ST FORMAT*. It is wholly my own work and I agree to indemnify Future Publishing against any legal action should copyright problems arise.

Signed _____

WHAT'S UP, DOC?

Included in some of the folders on the Cover Disk there's a documentation file containing notes from the programmer, or an upgrade/contributions address, or operational hints and tips. These are always worth reading, or printing out if you have a printer, because *FORMAT's* Cover Disk pages often skip on the highly-detailed aspects of a complex program, especially if there are DOCs present on the Disk.

Documentation files are usually named something like *README.DOC* or *PROGNAME.TXT*. To read them just

double-click on the file icon and you see a dialogue window appear. This says something like "You can only show or print this document." Click on *SHOW* and your ST displays the file on-screen. (This is usually more readable in medium or high resolution, even if the program runs in another resolution.)

Click on *PRINT* and your ST sends the file to a printer – if there's a printer connected and set up correctly. Be careful that you don't click on this if you don't have a printer, or you may cause your ST to "hang up."

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The mystery/role-playing adventure, combining History and classic science fiction, based on the world famous role-playing game by Game Designers' Workshop.

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● Historic 19th Century weapons include 30 guns, 4 throwing weapons and 9 close combat weapons. Ranging from bolt-action rifles and single-barrel revolvers to swords and daggers.

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● Realistic combat sequences let you control each character individually, while still giving general orders to the others.

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● Meet and interact with over 500 unique characters, each with distinct personalities.



SCREEN SHOTS TAKEN FROM IBM PC VERSION

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Based on MegaTraveller by Game Designer's Workshop, the most popular science fiction gaming system and now the critic's choice as the Number One Computer Game!

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Brilliantly balanced between complexity and playability - MegaTraveller 1's gameplay is a miracle... "The best RPG/Adventure game of the year."

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A fantastic RPG with loads of puzzles.

AMIGA FORMAT

I can't think of any role-playing game which has the depth and richness of what's going on.

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This game is truly, uncategorically "Mega!"

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A quantum leap for sci-fi RPG's.

AMIGA COMPUTING

"A triumph of intelligent game design."

THE ONE

No other computerised RPG comes as close to being an accurate conversion as MegaTraveller 1.

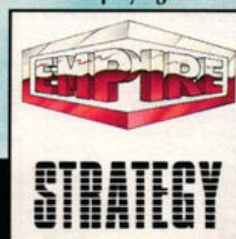
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ST Writer Elite v4.1**BY:** BRUCE NOONAN, MD**SIDE:** 1**MACHINE:** ALL STs**RESOLUTION:** ALL RESOLUTIONS**FOLDER:** STWEL4**FILES:** STWRITER.PRG,

README.DOC

GET STARTED WITH: STWRITER.PRG

Here it is! The word processor that set the PD world alight - *ST Writer Elite*. This is version 4.1, the most up-to-date version available. With this, you can create and edit your own document files, just like the ones you see accompanying programs on the Cover Disk. If you have a printer, you can connect it up to your

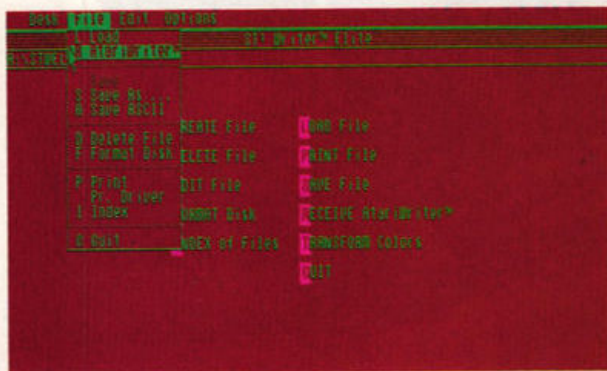
ST and use *ST Writer Elite* to create hard copies of your letters, manuals and important text files.

ST Writer Elite comes complete with an on-line help mode (accessed by the HELP key) giving instructions on all the features and guiding you through the creating and saving of documents.

Accompanying *ST Writer Elite* is a document file which you can load into it. This contains details of the major modifications and updates which have been added to the program since earlier versions. If you're having any problems, it's a good idea to have a read of this and see if it answers your questions.

Load up the main program (by simply double-clicking on STWRITER.PRG) and then use the keyboard shortcuts (listed on screen) to begin working on your documents.

● **ST Writer Elite** is the standard in the field of Public Domain word processing. Now the latest version is all yours. All you need to do is write!

**ShowMem****BY:** JOHN EIDSVÖG**SIDE:** 1**MACHINE:** ALL STs**RESOLUTION:** ALL RESOLUTIONS**FOLDER:** SHOWMEM**FILES:** SHOWMEM4.PRG,

SHOWMEM4.TXT

GET STARTED WITH:

SHOWMEM4.PRG

ShowMem4 enables you to examine the GEMDOS memory descriptor lists. The location of these in memory is not documented by Atari. You may list the information to the screen or to a printer by selecting the appropriate button in the initial alert box. The listing includes all allocated memory blocks, followed by all memory free blocks.

Hold down the <Alternate> key when you select the output device and you also get the memory descriptor waiting list. When GEMDOS splits a block into two smaller blocks, it uses this list to get a new descriptor location. When two contiguous blocks are merged, the unused block is put back in this list. For this reason, the entries in this list may or may not contain any useful information.

ShowMem4 is specially written so that it can be run as either an accessory

or a program. All you have to do is change the name (using Show Info) so that the extension (last three letters) is .ACC for an accessory, or .PRG for a program.

The leftmost column shows the decimal size of each block as well as a total for each type of memory blocks. From this, you can work out exactly how much memory GEMDOS is using in your ST. While the listing is scrolling on the screen, you may pause or continue by using the mouse button.

For more detailed information on *Showmem4*, double-click on the file SHOWMEM.TXT, which contains notes from the programmer.

FAULTY DISK?

Oh no, it hasn't gone wrong, has it? We duplicate so many and so few fall over, but it's still annoying when they do. If you're unlucky, sorry. You're guaranteed a replacement if you send your faulty Cover Disk, with an SAE, to: *ST FORMAT* October Disk Returns, Discopy Labs plc, Unit A, West March, London Road, Daventry NN4 4SA. Sorry - only Discopy can help. We have no duplicate disks ourselves.

**SOFTMACHINE****ATARI HARDWARE**

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MEGA 4 ST + Pro 24 III	£784.99
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MEGAFILE 60 HD	£459.99
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Citizen 1240	£184.99
Citizen Swift 9	£189.99
Citizen Swift 24	£284.99
Swift 9/24 Colour Kit	£34.99
Star LC-20	£154.99
Star LC24-10	£199.99
Star LC-200	£214.99
Star LC24-200	£239.99
Star LC24-200 Colour	£299.99
Supra 40Mb Hard Drive	£394.99
Supra 105Mb Hard Drive	£564.99
Cumana 1Mb 3.5" Drive	£79.99
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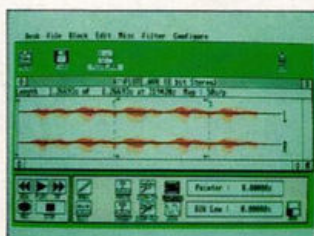
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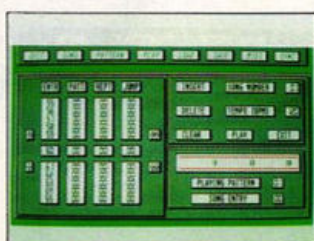
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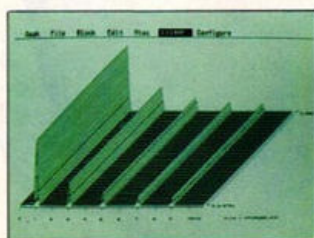
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As you have come to expect from **MICRODEAL** and Audio Visual Research, the **SOFTWARE** provided with the system is also packed with new features. **STEREO REPLAY** does not just set the standards by which other samplers are measured, it has **COMPLETELY** re-defined them!

The **STEREO EDITOR** program provides the user with the ultimate in power and sophistication, packed with features which appear for the first time on **ANY** home computer. This fully **DESKTOP** and **WINDOW** styled program allows individual samples to be loaded into the computer and edited separately. However, this is just the beginning. The program will allow the user to load in samples of 8, 12 or even 16 BIT resolutions in **MONO** or **STEREO** formats and freely convert between them. It is possible to take a cutting from a 16 BIT **MONO** format sample and edit it into a **STEREO** 8 BIT sample without even realising that the two sample files were different, the program manages all of the sample translations quite automatically!

The ULTIMATE STEREO SOUND SAMPLER

The **STEREO EDITOR** supports many useful editing functions including Mark, Hide, Cut, Paste, Insert, Delete, Clear, Fill, Overlay, Repeat, Gap, Reverse, Fade, Volume, Loop, Loop Join, Loop Cross Fade, Channel Swap, Channel Copy, Channel Cross Fade, Sample Pan, Sample, Pre-Sample, Play, Monitor, Scope Left or Right, Load and Save and more!

As if the list above was not impressive enough, the **STEREO EDITOR** can also perform more advanced forms of editing such as frequency 'Re-Sampling', Sample **FOURIER** analysis, Digital filtering, Digital Hall, Room, Echo, Reverb and Flanging effects, Play up to 10 different samples from an external **MIDI** keyboard or sequencer and **MUCH, MUCH** more.

The '**STEREO BEAT**' program can load **KITS** of up to 15 different samples into memory at once and then play 3 channel (**LEFT**, **CENTRE** and **RIGHT**) sounds out from the **STEREO PORTS** of the cartridge at the same time. Memory permitting, **KIT** samples can be up to 1 MByte in length **EACH**, permitting the user to record sections of their favourite music and completely **RE-MIX** them using **STEREO BEAT**. Patterns of **BEATS** are arranged on a grid format **PATTERN EDITOR** and can be varied from 4 to 32 **BEATS** in length with timing set to 1/8, 1/16 or 1/32 with or without Triplets. **SONGS** are constructed from simple lists of **PATTERNS** with **LOOPS** and **SONG POSITION JUMPS**. A **SONG** can contain up to 99 separate song entry steps whose tempo can be varied from 40 to 239 B.P.M. **STEREO BEAT** can act as **EITHER** a **MIDI SLAVE** or **MIDI MASTER** and can both generate or respond to **MIDI START**, **STOP** and **SYNC** commands.

The **STEREO REPLAY** system is also supplied with routines and examples of code which enable the user to play 8 BIT **MONO** or **STEREO** samples recorded and edited with the system from Machine Language or from High level languages such as **HISOFT**, **GFA** and **STOS BASIC**.

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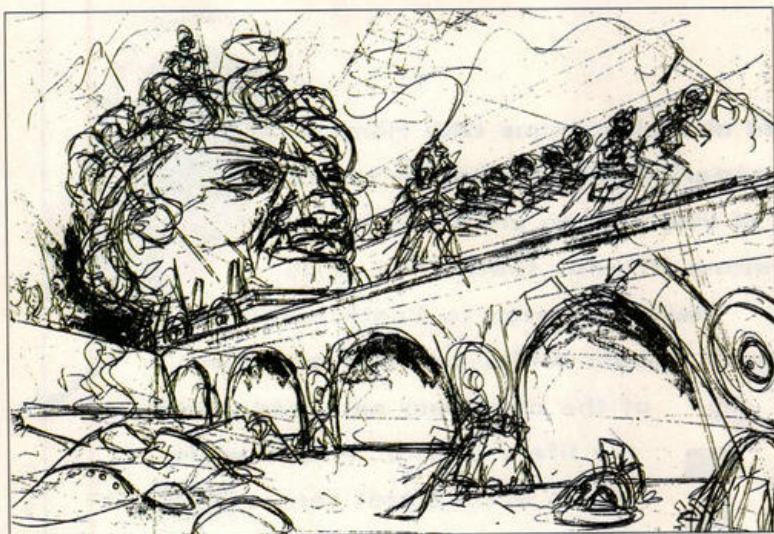
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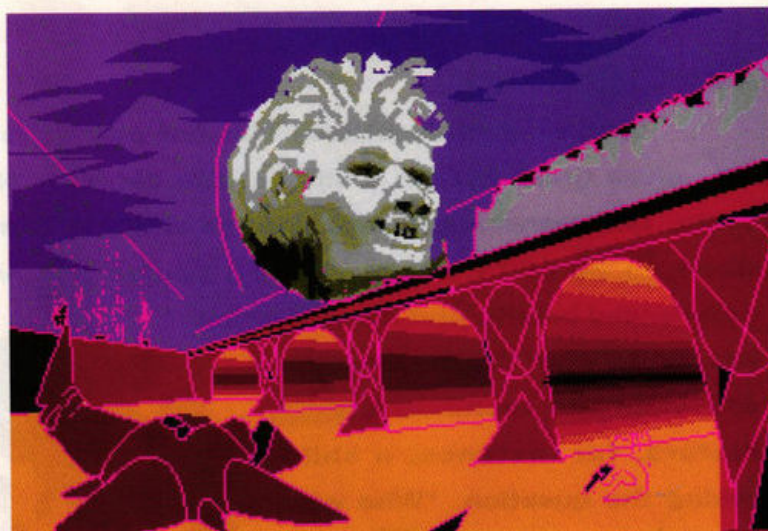
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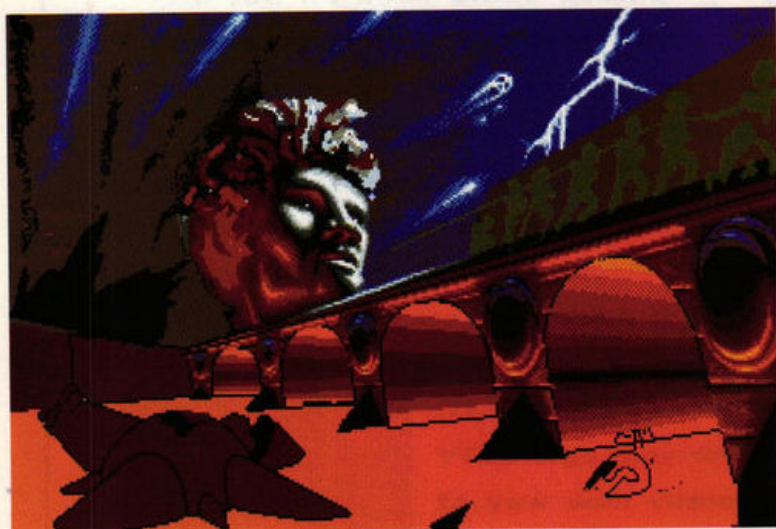
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① This sketch drawn by Bullfrog graphic artist Paul McLaughlin shows the first development of a scene from *Populous 2* – the basic outlines of a head, the people and a bridge are shown, with some vague suggestion of a swamp in the foreground.



② Paul's initial ST sketch bears a close resemblance to the original design. The head, the most striking part of the picture, has been worked on first – the bridge, people and so on are still fairly vague outline images, just to check positioning.



③ The bridge, previously only a vague shape, now becomes more defined, with detail on the supporting arches. The line of people also becomes a little more recognisable. The squiggle from an earlier creative hiccup still remains, for now.



④ The last major undetailed area, the foreground, now gets the works: the arches under the bridge are filled in and the – er, object in the foreground is shaded in. The squiggle gets covered over by the base colour of the watery sludgy stuff.

Graphic details



Ever since the days of the Atari 800, graphics have been one of the main selling points for most games. But just who creates all those wonderful displays – and what's stopping you from doing just as well, or even better? Ed Ricketts picks the pixels to pieces and reveals how it's done.

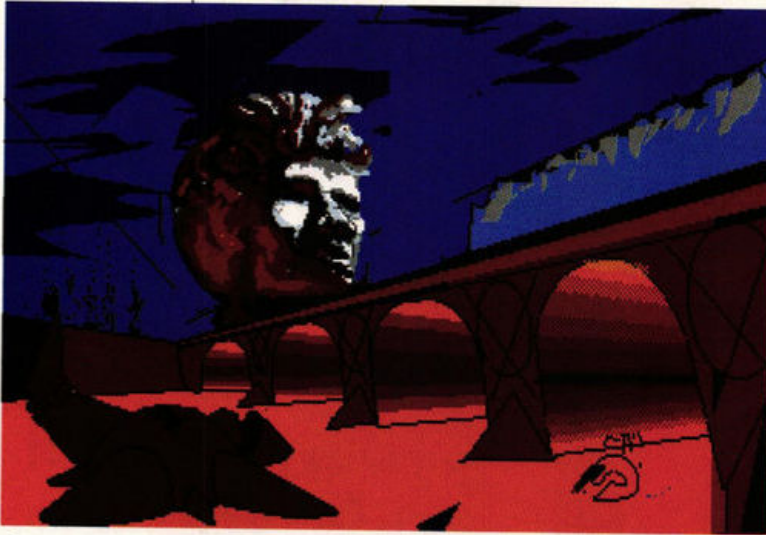
With an ST and even the most basic doodling program, anyone with some time and a decent telly can produce something to be proud of – the number of submissions *ST FORMAT* receives for the Gallery pages proves that.

Everything you draw can be erased and redrawn time and again, so you're not committed at every stroke. But no matter how long you take perfecting your masterpiece, you doubtless still stare in fascination at the finished graphic displays in most current games and wonder why they seem so – well, polished. (And if you don't – get in touch with a major software house now!)

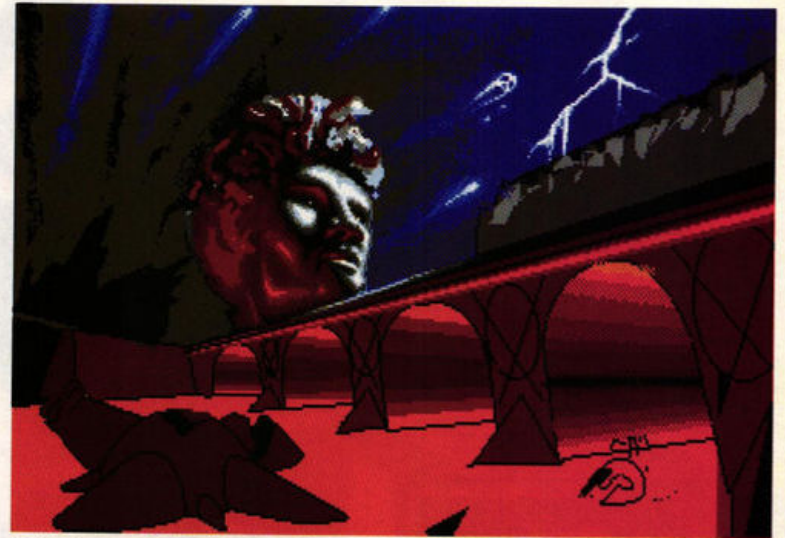
The fact is that the professional graphic artists may not have been born any more talented than you are, but they know the tricks and techniques that make good graphics shine and bad graphics stand

out like a sore sprite. What is encouraging is the number of graphic artists who have no real formal training. A glance at some of the interviews around these pages reveals that many of today's artists got their jobs simply by applying to the software house concerned, with no more experience than an Arts Foundation Course at college or similar. This proves that the software producers are accepting people on their talents rather than on their experience.

So take the professionals' tips on these pages, dust off your favourite ST art package and let your creativity loose! And remember: *ST FORMAT* prints a selection of your ST art masterpieces every issue – see page 122 for details of what we need from you – and there's no better way to get noticed by the ST community. If you've always thought graphics are where your future lies, or even if you've just wondered how they do it, read on!



② Two main changes on this pic: the head has been moved back along the bridge somewhat, making it smaller in the process, and the colours have been altered to a much darker palette to give the scene a more menacing and moodier aspect.



③ Now the head is even more detailed, as is the sky – there are now some recognisable objects (tortured souls, no doubt) in it. A few more colours have been altered, but this is the last major palette change. At least, Paul hopes it is.



④ To make the head look more fearsome, some fangs have been added. Thanks to another artistic mood-swing, the object in the foreground has been changed into something completely different. The water is now given the merest hint of waves.



⑤ And finally, folks! With a horizontal picture-flip and the addition of a skeleton by the arches, a new atmosphere is created. The people on the bridge are much better defined, which makes them a stronger foreground element.

WHERE DO YOU BEGIN?

With the possible exception of 3D games, every game's graphic display consists of two vital elements: background and foreground. The background is generally simply decoration and scene-setting for the action happening with the main characters in the foreground, though occasionally it may become the centre of attention itself – as in *Lemmings*, where the background is the focal point of the game, and *The Secret of Monkey Island*, where it's possible to clamber all over the scenery and indeed it's sometimes necessary to walk "into" it.

But no matter how attractive the backgrounds may be, the thing you're staring at most of the time is the character sprites in the foreground. 20 minutes with the STOS sprite designer is bound to convince you that drawing and animating effective sprites is the most difficult task a graphic artist can face. When

you're working in areas of only 16x16 pixels – and sometimes just 8x8 – there's not much room for expression. You may find you're comfortable with it, though. Jon Hare of Sensible Software, programmers of *International 3D Tennis*, says: "I actually find it's easier to work at small sizes. I'd much rather design the sprites for *Mega Lo Mania*, which are 16x8 pixels in size (including the shadow), than a full screen picture. I find those very daunting."

One of the main points to keep in mind is that what looks odd at the large magnification necessary for designing may look great at normal size. The effect is easy to see: simply take a sprite from any game, blow it up using the Magnify function in your art package and see what a mess it looks. The trick is knowing which combinations of pixels combine to produce the desired effect – it's usually nothing like what you would envisage.

Jon Hare again: "For *Mega Lo Mania*, getting the basic model of the characters right was the most important thing. Once the design for the little man, without clothes or weapons, is correct, you can dress him up and give him various weapons to create all the other men, simply by adding the necessary embellishments. *International 3D Tennis* is another good example of this. The basic wireframe man was perfected first (someone described it as looking like a →

The professionals may not be any more talented than you, but they know the tricks that make graphics shine

NOT A STITCH TO WEAR

These graphics from *Mega Lo Mania* demonstrate the range of sprites that have to be defined for the characters. Blow up the prehistoric man and you can see what a mess he looks at high magnification. The trick when working at these levels is knowing that less is more: three carefully-placed pixels which look like nothing at ten times magnification can represent his entire clothing.



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→ Czechoslovakian cartoon) and then made to do all the things he can in the game, like running and serving – it's almost like having a marionette in front of you."

Professional graphic artists always have to bear in mind that the designs they create are likely to be ported over to other 16-bit machines. This means that, unless they're changed in some way during the conversion process, the graphics have to be designed to the lowest common denominator. The PC, for example, can display only four colours on-screen at once in CGA mode, so any sprite intended for that machine must conform to this restriction, even though the ST can display 16 colours in low resolution. The *Mega Lo Mania* sprites, though not ST originals, were designed to be as compatible as possible with every other 16-bit micro, thus avoiding the need to downgrade them when the time for conversion comes. This means less work for the artist in the

One trick is knowing which combinations of pixels give the desired effect – it's often nothing like you envisage

long run because only one set of sprites need be created, but it has the disadvantage of not properly exploiting the target machines' graphical abilities to the full. Everyone's played those American games that make your ST look like a PC (Chuck Yeager's *AFT* is a good example) because the programmers have simply ported the code straight across without retouching the graphics or improving the user interface to take advantage of the ST's superior display.

Most graphic design is a two-way process, the artists and programmers both contributing ideas and designs. Ideas may be thrown in, used for a while and then universally rejected. For instance, early on in the creation of *Populous 2* there was a small animated icon on the control panel that represented what effect was happening on the main screen at that point. That has now been removed because it would detract too much from the main display. Turn to page 40 for an exclusive look at how the game is shaping up.

Finally, there are plenty of ways you can get into graphics. It's not unknown for software houses to spot budding talent in these very pages. Give it a go – you have nothing to lose, but plenty to gain! **stf**

● Software you need: p 36 ● Jargon-busters, PD alternatives: p 38

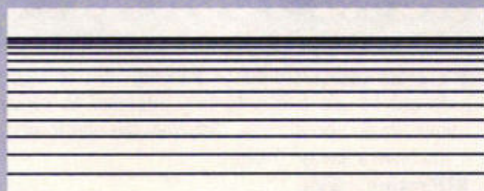
GET IT IN PERSPECTIVE

Perspective is a tricky business. First you have to design the background so that the characters or sprites look as if they can move freely "in" or "out" of the screen, which generally means some sort of 3D effect. Then you must either devise a memory-intensive scaling routine or design a whole new set of sprites, one for the character gradually decreasing in size as it disappears into the distance and one for its counterpart sprite as it grows larger. These sprites must be redesigned for each area of the screen that the character can move into, since something walking off in the middle obviously appears different to walking off at the side.

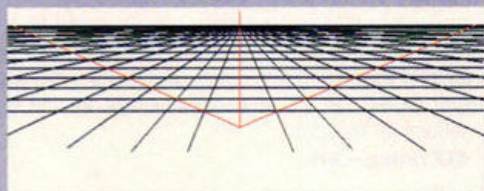
All this sprite definition naturally causes much more work for the graphic artist and adds to development time, which is why very few games employ these techniques. When it's done well, though, the effects can be stunning. Lucasfilm's *The Secret of Monkey Island* can testify to the realism these techniques add.



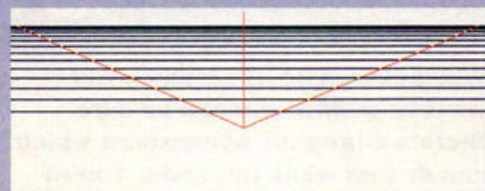
● Some nifty design means Guybrush, star of *The Secret of Monkey Island*, is able to wander in and out of the screen at will, giving you a better, more interactive and therefore more enjoyable game, but giving the programmers even more of a headache.



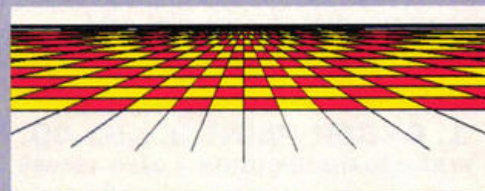
● The easiest way to suggest perspective is with a simple checkerboard effect – always impressive yet dead easy to create. First draw some lines across the screen, the gap between them increasing by one pixel each time. So there are spaces of 0, 1, 2, 3 pixels, until you have a fair number of lines.



● The point on the horizon mid-screen is the vanishing point. From here you now need to draw radiating lines that pass through the intersections of the red diagonal lines and the horizontal ones. This ensures that the spacing between the squares is correct. If you're using *Degas*, the Rays function can be handy here since it ensures the lines all originate at the same point.



● Having laid down the basic horizontal proportions in this way, now you need to draw a vertical line down the centre of the screen. From this line draw two more oblique lines that end near the edge of the screen. Make sure that the angle between them is greater than 90 degrees.



● The basic checkerboard is now finished. If you like, the squares can be filled with alternating colours to build up a classic raytracing "ground" – as used in countless games, both great and awful. Alternatively, and more usefully, the board can be used as a template for other drawings – the lines being treated as the foundation to line up buildings, for example, with the correct perspective.

ROB WHITTAKER

Currently graphic artist for Storm – working on *Big Run* and *Double Dragon 3*

Previous Projects: "The only game I've worked on from start to finish on the ST is *Judge Dredd* – I usually do bits here and there on various things."

Background: "I started at school on the Commodore 64 computer. My friends and I used to write demos for it, and occasionally the odd game. Everyone regarded us as 'computer whizzkids' – we sold a few budget-style games, and people used to come up to us for

money! It was really exciting back then. Eventually we progressed onto 16-bit machines and did some demos for that." Rob got his first professional job in a most unspectacular way – he simply applied for it for in the normal way and got it!

Favourite Picture: "The Commodore 64 version of *Exile* has a loading screen by Paul Docherty, AKA Dokk, which is absolutely brilliant."

Do you use any art packages a great deal? "I hate *Art Studio*. It's fine if you only want to design



sprites with it – I did some Spectrum sprites on the ST with it – but for straight pictures it's deplorable. *NeoChrome* is the program to use for that. *Deluxe Paint* is also worthwhile, though using it for sprite animation is awkward because you have to align them on screen in the correct place every time."

GIVING YOU THE TIME OF DAY

You tend to notice the time of day more in newer games. A few years ago time didn't really exist in many games, but titles like *Flames of Freedom* and *Hunter* have shown how effective night scenes can be. Strictly speaking, the transition from light to dark in these games is incorrect, with the colours changing in sudden leaps. For a truer representation, any shadows should lengthen gradually and colours fade to a uniformly dark shade. One game that attempted this complicated piece of programming is *Tau Ceti*, Pete Cooke's port from the Spectrum. This not only features sunrise and sunset but full light-source shading – as the sun moves around the sky, the light and shadow on the surface of objects in the gameworld change accordingly. *Flames of Freedom* also features this effect but it isn't really noticeable because the 3D playing area is so evenly lit.



DAN MALONE

Currently at work on
Chaos Engine by the
Bitmap Brothers (due
November from
Renegade)

Previous Projects:
Cadaver, The Payoff
(*Cadaver* data disk),
Speedball 2

Background: "I've always
been into comics and comic
art. After leaving art college I was
looking for work as an animator or

comic artist, so when I saw an ad from
Palace for a graphic artist I applied
straight away. I didn't know it was
going to be work on computers!

The first main program I worked
on was *The Sacred Armour of Antiriad*
on the Commodore 64; there was a
small comic that came with it which I
did too."

How did you come to work with the
Bitmaps? "There was no real work on
at Palace, so on looking around for
work I saw an ad from the Bitmaps. I

gave them a ring and they speeded up
the development of *Speedball 2* a bit
so I could work on it, which was nice
of them."

Favourite Picture: "I'm very fond of
Nighthawks by Edward Hopper."

Any favourite paint packages, or
one you tend to use in preference
to others? "All my stuff at the moment
is done on *Deluxe Paint 3* on the Amiga
and then ported to the ST. When I do
originate things on the ST I use *Degas*
Elite - it's very well designed and
doesn't go about things in a round-
about way. We've actually got a
rewritten version we use - it includes
animation and stuff like that."

AS LONG AS YOUR ART'S IN IT

Whichever style of graphics you
want to create, you can be sure
there's a program somewhere which
can do just what you need. You're
out of luck, however, if you want a
single program that can do every-
thing - there simply isn't currently a
package that excels in all areas. It's
really a case of horses for courses.
Here, then, are **FORMAT's** Top Ten
recommended commercial art/
animation packages:

1. CYBER PAINT 2. £51.00.

ELECTRIC DISTRIBUTION ☎ 0480 496666



Massively versatile, this has all the standard
drawing tools, plus many more animation-
orientated gadgets. Sequences produced
with other *Cyber* programs (*Cyber Studio*,
Control and so on) can be retouched and enhanced
frame-by-frame, to produce 3D sequences with the
detail of conventional animation. Stonkingly good, but
quite pricey.

STF rating - 92%

2. DELUXE PAINT. £49.99.

ELECTRONIC ARTS ☎ 0753 549442



Degas' big brother, acclaimed by some as
the best ST art package. Its operation can
be tricky, though, and disk accessing can
be a pain. Also contains many animation fea-
tures and some facilities not usually found in ST pack-
ages, such as graduated fills and Bezier curves.
Similar in many ways to *Cyber Paint 2* - there's no
agreement which is preferable. Try it for yourself with
the useable demo on Cover Disk 15. (And if you
missed that, turn to page 136 right now.)

STF rating - 91%

3. CANVAS. £14.95.

MICRODEAL ☎ 0726 68020



You won't find a cheaper package than
Canvas (apart from the Public Domain pro-
grams like *NeoChrome*). The low price
doesn't mean low quality; it's full to the brim
with the usual goodies and some more esoteric ones,

like a 3D object creator - although this is slightly
awkward to use and not really intended to replace
Cyber Studio and the like. Definitely the one to go for
if you have a limited budget.

STF rating - 90%

4. CYBER STUDIO. £51.00.

ELECTRIC DISTRIBUTION ☎ 0480 496666

The premier 3D animation program for the ST.
Despite its age no-one's come up with anything as
versatile or powerful as this. It contains some rudi-
mentary 3D modelling/colouring tools, and a record-
ing system so that animations can be saved to disk
frame by frame and replayed independently. Really at
its best when used with *Cyber Sculpt* and *Cyber Con-
trol*; on its own it's probably adequate for the less
serious 3D modeller.

STF rating - 87%

5. SPECTRUM 512. £29.95.

SILICA SHOP ☎ 081 309 1111

Getting on a bit too, but still used by many people.
Not the friendliest of front ends, but the tools avail-
able are well suited to the increased number of
colours. Unlike *Quantum Paint*, you can actually draw
on a screen that shows all the colours simultaneously
- there's no need to redraw it every time you want to
look at the full pic, so you get a better idea of how
it's progressing. Some of the functions can take a
while to execute - gradient fills are notoriously slow.

STF rating - 86%

6. RETOUCHE. £150.

COPYCARE SERVICES LTD ☎ 081 679 7307

For the more serious (or richer) enthusiast, *Retouche*
is an image processing program designed more for
retouching existing images (hence, in a cliché, the
name) rather than creating them from scratch. Pic-
tures can be treated in an impressive number of
ways, and tools simulate the effects of adding water,
charcoal and other materials in a very realistic way.
Useful for playing with digitised images. It's very
specialist and very expensive, but there's nothing to
touch it at what it does.

STF rating - 86%

7. DEGAS ELITE. £24.95.

ELECTRONIC ARTS ☎ 0753 49442

The grand-daddy of art packages, still going strong

but showing its age slightly. Fairly basic when com-
pared to some of the modern programs - for
instance, some functions such as *Rotate* are a little
bit slow, and it lacks animation - but it contains virtu-
ally everything the casual doodler might need, plus a
few extras, such as ten levels of magnification. Dead
easy to use, too, it's still the most popular package,
judging by how many *STF* Gallery pictures are drawn
with it.

STF rating - 82%

8. QUANTUM PAINT. £24.95.

SILICA SHOP ☎ 081 309 1111

The only ST art package to offer 4,096 colours on-
screen simultaneously. It does this by an incredibly
techie method that results in a slight flicker of the
colours (since the ST shows only 512 colours on-
screen anyway) and thus the pictures are best viewed
on a monitor. Normal and 512 colour modes are also
included, but unfortunately the limited drawing tools
available and awkward mode of operation lessen the
usefulness of the program. Could have been better.

STF rating - 78%

9. ADVANCED OCP ART STUDIO. £19.99.

DATTEL ELECTRONICS ☎ 0782 744707

Yet another veteran. An excellent program for creat-
ing sprites of all types (except 3D), its straight-
forward drawing features are limited. Some people
swear by it, while others find it too annoying to be put
to any serious use. (If you're after a first-class sprite
creator, check out *Animaster* - see page 118 for
how to get your copy.)

STF rating - 76%

10. FLAIR PAINT. £24.95.

DATABASE SOFTWARE ☎ 0625 878888

Depending on your viewpoint, *Flair's* front end is
either a masterpiece of creative programming or a
pain in the accessory. It uses a proprietary pop-up
window system that looks wonderful but makes some
of the functions very difficult to access. Couple this
with the relatively slow operation and you need some
real patience to work with this package. It's a pity
because there are some nice features tucked away,
including Bezier curves and the ability to create pic-
tures larger than the screen.

STF rating - 71%



JON HARE

Graphic artist/designer for Sensible Software (see *Mega Lo Mania* review, page 76)

Previous Projects: *International 3D Tennis*, *Wizzball* ("though the conversion wasn't done by us on these two and we're not really happy with them"), *Shoot-'Em-Up Construction Kit*

Background: "I originally did an art course at college. Chris [Yates, another member of Sensible Software]

was having trouble with some graphics he was doing for a company he was at, so he asked me to step in. Lo and behold, I found I was good at it. Our first games were on the 8-bits: *Parallax* on the C64, *Sodov the Sorcerer*, *International Karate*, *Skyfox* and a *Lone Wolf* game on the Spectrum. The biggest jump we made was from the Commodore 64 to the 16-bits. Modesty aside, everything we did on the C64 was virtually guaranteed to be a hit, but it was easy because it was so limited. On the 16-bits you have so much more choice, so you're continually trying to perfect everything and find new techniques."

Favourite Picture: "I like some of Chagall's stuff, all those pictures with violins and goats. The Flemish school appeals to me too – those pictures with black backgrounds, heavy contrasts and very fine, lifelike faces. I hate the Impressionists like Renoir, but Dali's okay."

Favourite Graphic: "*Speedball 2* has some nice designs, though the game is awful. *Virus* is good too."

Favourite art package?

"Unfortunately we do all our graphics work on the Amiga – not really through choice, just because we happened to have one. If we'd had an ST we would have used that instead. We're very conservative that way!"

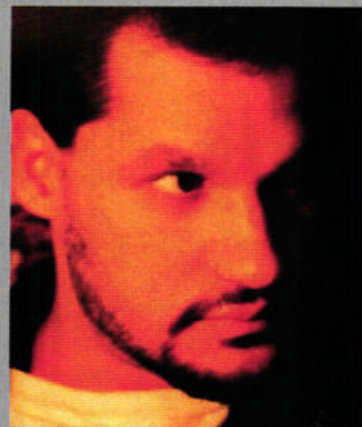
HERMAN SERRANO

Last project: creating, retouching and revamping graphics for Audiogenic's *Exile*

Previous Projects: loading screens for *Starglider 2*, *Carrier Command*, *Verminator* and *Cybercon 3*; in-game graphics for *Vaxine* and *Weird Dreams*; intro sequence for *Predator 2*; many other projects

Background: "I did an Arts foundation course at Kingston Poly, and naturally used to visit the bar frequently. One day I met some programmers there who asked me if I would be interested in doing some computer graphics. I really got into it and did about 30 screens in a couple of weeks. We ended up doing something called *The Ancient Mariner*, which was little more than a slideshow, really, and was never released."

How did you get into professional graphics? "I went to Rainbird with the



idea for *Weird Dreams*. At first they weren't really interested and sent a very junior bloke along to see me. Eventually I managed to persuade them and *Weird Dreams* went ahead."

Favourite Picture: "I'm very much into the surrealists, so a good Dali suits me fine."

Favourite Graphic: "I was a big fan of *Dungeon Master*, so *Eye of the Beholder* was a favourite of mine. The graphics were excellent, though the animation, as is usual, was a bit of a let-down. People try to strive for good graphics because it sells a game but then they skimp on the animation."

Any favourite art packages?

"Unfortunately, I don't use the ST for original graphics any more, though that's where I started. My favourite package was always *Art Director* – I liked the way the icon strip on screen had every function available, without you having to flick between screens."



● Oh no! This Rigellian newsagent doesn't carry *ST FORMAT*! That's the worst thing about being an *Exile*...

IT'S GETTING DARKER, JIM

The background and surrounding graphics virtually dictate the style of the game. Darker colours naturally suggest gloom. The graphics for the spaceship in *Captain Blood* were drawn very much in the style of HR Giger, the designer of *Alien*, to give it an organic feel. With the blues and purples used, these finely-detailed graphics conjure up a dismally uninviting vision of the future. Compare that with the graphics in most platform games, like *Rainbow Islands*. These tend to be bright, with simply-drawn, almost childish, shapes and many contrasting primary colours to convey an atmosphere of happiness and fun.

PD ALTERNATIVES FOR THE STARVING ARTIST

Not everyone has 50 quid lying around to casually splash out on a graphics package, but as usual there are plenty of alternatives available in the Public Domain. Most decent PD libraries stock several, so shop around for the best deals. You might find exactly what you're after for just a few quid. (For your nearest PD library, check *FORMAT*'s comprehensive directory on page 50.)

Perhaps the best known is *NeoChrome*, simply because it was bundled with many early STs and was Atari's first official graphics package. But the field doesn't end there. One area which is particularly well served by the PD market is that of monochrome packages. There are very few professional high-resolution-only titles, and the few that do exist are usually biased towards use by DTP packages. PD titles like *The Artist* and the *Atari Image Manager* give you more mono facilities than packages costing hundreds of pounds. Even if you're after the multi-colour displays offered by *Spectrum 512* or *Quantum Paint* you should find something capable of it in the PD – look at *Palette Master*.

As well as these programs there are of course many commercial software demos that enable you to try out various art packages in a restricted form, such as *DPaint*, *Paint Pot* and *Flair Paint*. These demo versions usually have the Save and Print functions disabled, but they're still

good ways of seeing which package is right for you if and when you decide to shell out.

1. NEOCHROME MASTER



This version of *NeoChrome* has been completely updated by a member of the Delta Force programming team, bringing one of the oldest PD art programs bang up to the minute. Now included, along with the usual straightforward functions, are fully-functioning animation, full-screen display, improved user interface, a whole heap of drawing tools and many more enhancements to make this the best PD art program there is.

STF rating – 91%

2. ANI ST

Originally released for £80 under the name *Aegis Animator*, this is now Shareware. It's more an animation tool than a fully-fledged paint package and specialises in morphological transformations – which means it can change one shape to another, calculating all the stages in between to give a smooth transition. Good results can be obtained with a little application, though it's probably not the best tool for straightforward sprite animations.

STF rating – 84%

3. PALETTE MASTER

A little bit out of the ordinary in that it enables you to create full 512-colour pictures, though in practice you probably find that you use 20-50, because of a limitation of the number of colours you can have on one scan line. Has *Degas* and *Neo* importing functions, and pictures can be saved as stand-alone programs, though if you want to incorporate any into your own programs there is info included for doing so.

STF rating – 82%

4. ATARI IMAGE MANAGER

Intended more for retouching existing pictures, particularly digitised images, than for creating them from scratch. Spurious visual "noise" can be eliminated, contrast altered, areas highlighted and so on, until you achieve the perfect picture.

STF rating – 79%

5. MEGABLIT

The difference with this one is that your pictures may be anything up to 2,560 by 1,920 pixels in size – but only on a mono monitor with at least 1MByte RAM. Has *Degas* import/export options and a wealth of drawing tools.

STF rating – 78%



A selection of characters from *Golden Axe*. One of these is a dead ringer for Kevin Bulmer... but which?

KEVIN BULMER

Just finished *Terminator 2* at Ocean

Previous Projects: *Corporation*, *Gauntlet 2*, *Resolution 101*, *Golden Axe*, *Mickey Mouse*, *Italia 1991*, *Dragons of Flame*, *Shadow Sorcerer*, *Galaxy Force*

Background: "I'm a trained graphics artist, and I've got my own studio. I was always very interested in animation, and exploring avenues other than conventional pictures. When I started experimenting with computers I was so taken with them I moved away completely from my previous work! I started

on a ZX81 – you can't get more fundamental than that – and moved up to an 8-bit Atari. We got an ST as soon as it was released – ours was about the 22nd ST ever imported into the UK! I spent most of my time trying to convince the software houses that the ST was the way forward – at that time everything was on 8-bit."

How did you get into professional graphics? "When US Gold said they might need a conversion of *Gauntlet* we were first in line. At that time Gremlin Graphics were in close collab-

oration with USG, so when the word came from USG to start the conversion we worked with them quite a bit. After the game was released, Gremlin moved away from USG. We did *Gauntlet 2* freelance and decided to stay in the computer graphics business. It's the best thing we've ever done."

Favourite Picture: "It's very hard to come up with one. On the wall of my office I have three MC Escher pictures – the three classics: the never-ending staircase, the impossible waterfall and the hands drawing each other."

Favourite Graphic: "The scenes from *King's Quest 5* on the PC [soon for the ST] impress me a lot, although they've been hand-painted and then digitised, so I suppose it's cheating really."

Favourite paint packages? "We believe you should pump money into technology, so we've got a lot of very expensive stuff we can do wonderful things on, like the polygon heads at the beginning of *Corporation*. On the ST we use the whole range of Cyber packages – *Cyber Studio*, *Sculpt*, and so on. There's nothing to touch their ease of use. We've also got an Amiga 3000 with a 24-bit graphics board, which gives a resolution of 8,000x8,000 pixels with 16.8 million colours. We then use a program called *Rasta-Link* to convert these displays to ST, PC and Amiga screens – 16 million colours down to 16!"

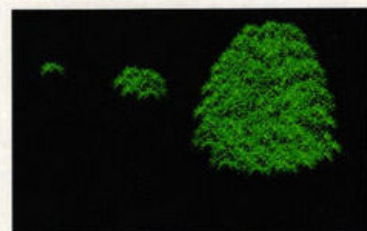
SO YOU WANT TO BE A TREE

One of the items that crops up time and time again in games of all persuasions is the tree. It also happens to be one of the most difficult natural objects to draw, as anyone who's tried can tell you. That's if you try to do it "by hand." The most helpful technique is not to concentrate on drawing each individual leaf, but go for the "Gestalt" or holistic approach.

- Using your art package's airbrush function and a smallish nozzle, spray in a semicircular motion with a dark shade of green and again with a slightly lighter shade

- Now cut and copy this basic shape into the copy buffer. The shape is then pasted repeatedly onto itself with an overlap, so it's layered. Try to follow the basic "classic" shape of a tree: narrow at top, getting wider in the middle and then narrowing again slightly, like a pear upside-down

- You might want to airbrush a very small amount in black on the places where you'd be able to see through the boughs, just to give some shadow effects, and draw in the trunk and branches



● A tree drawn as above. (You call that a tree? Looks more like a pretty wimpish bush to me – or Cousin Itt from the Addams Family gone a bit mouldy...)

JARGON BUSTERS (or "That's enough graphic language, pal")

Anti-aliasing: graphic displays with a relatively low resolution, such as the ST's, cause problems when you try to display diagonal lines. Instead of appearing smooth, the line is broken into a series of steps because there just aren't enough pixels to convincingly form the line, a process called aliasing. The problem may be lessened somewhat by shading the boundaries between the two contrasting colours with many shades of a suitable colour, giving a more gradual transition between the areas and smoothing out the line – anti-aliasing. One side-effect is that the whole display then tends to have a softer appearance. Anti-aliasing is almost never used in games because it takes so many colours to do effectively that it's very easy to run out of shades. See also *jaggies*.

Cut and paste: to delimit an area of the screen and copy it to a temporary storage area, before using it somewhere else, perhaps more than once. For instance, to draw a bush you could just draw one leaf, copy it to the paste buffer, and then simply use that image over and over again (perhaps rotated or flipped) to build up the complete bush.

Depth cueing: mainly used for 3D graphics, this is the technique of shading parts of an object intended to appear farther away with darker shades, reinforcing the impression of distance.

Depth sorting: see *hidden line removal*.

Dithering: a technique of mixing two colours in a "chess-board" pixel pattern. The colours don't literally "mix" in the way that paints do on a painter's palette, but they effectively blend visually, producing what looks like a third colour, halfway in tone between the two original

shades. This is the usual way to produce what looks like more than the standard number of colours.

Flat/Phong/Gouraud shading: in simple terms, three algorithms used to shade 3D objects, giving increasingly sophisticated and realistic results. See the 3D feature in *STF 23* for a fuller explanation – and see page 136 to order that issue if you missed it.

Gradient or shaded fill: like a normal fill, but using a range of similar shades to produce a smooth transition from one colour to another. More effective with displays using 512 colours (or more).

Hidden line removal: wireframe graphics (see below) may be displayed in two ways: as completely transparent objects, so that you can see every line used in their construction (as if they really were made of a frame of wire), or as solid objects (without shading), showing only those lines that would be visible in real life. The process of removing the parts you can't see is called hidden line removal, or "depth sorting," it is very processor-intensive and can often take a very long time.

Jaggies: common term for lines that display aliasing – see *anti-aliasing* above.

Mask: An area of colour used to blank the area of the screen where a sprite is to be displayed, to prevent the sprite overwriting the background when it's displayed. More details in the animation feature in *STF 23*.

Palette switching: technique used to give more than the "legal" number of colours on-screen at once. It basically involves changing the palette of part of the picture as the electron gun (the mechanism that actually displays the

picture in the monitor or TV) physically moves down the display, so that the display as a whole contains more colours. Requires very accurate timing and is too processor-intensive to be used for much except backgrounds.

Raytracing: a way of colouring and shading 3D scenes by tracing the rays of light that would fall onto the objects from the light source and setting the colours appropriately. This process gives extremely realistic results, with shadows, reflections and refractions, but it has to be repeated for each pixel, taking immense amounts of time to produce even one frame and requiring many different shades to work effectively.

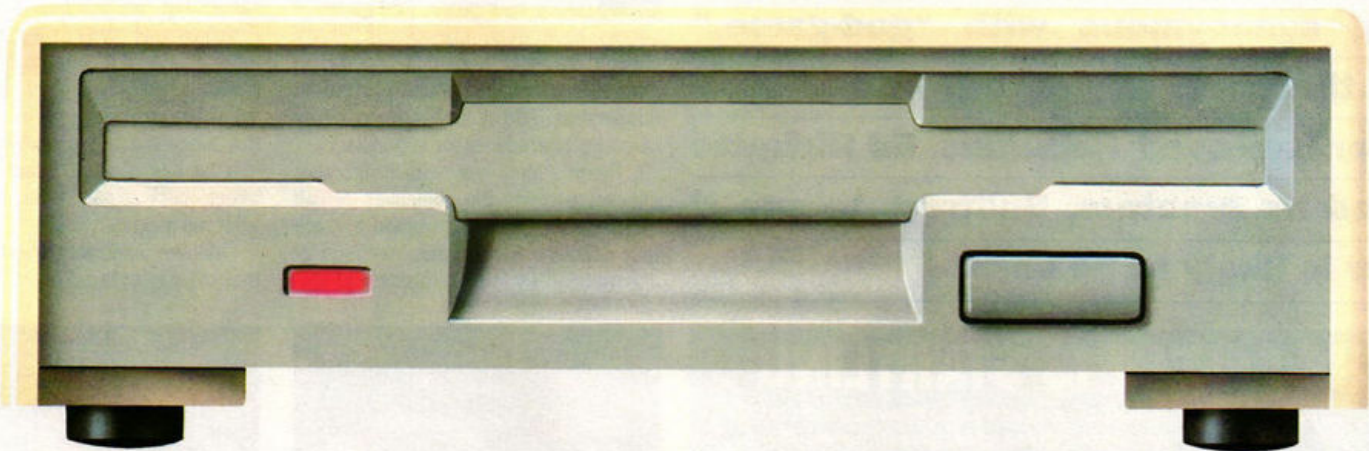
RGB: short for red, green and blue, the usual system used to quantify a colour. All colours are built up out of the three basic ones, and RGB numbers specify what amounts of red, green and blue are present, out of a specified scale. On the ST, for instance, there are eight levels of each colour (8x8x8 = 512 colours in total), so RGB 700 would be pure red, and 777 is pure white. The STE has 16 levels of each, making 16x16x16 = 4,096 colours.

Sprite: a term commonly applied to any game character (usually mobile) that is animated, whether or not it is controlled by the player.

Wireframe: the simplest representation of a 3D object, made up of lines showing the object's edges, as if the object actually were made of a frame of wire. See also *Hidden line removal*.

Z-buffering: simply put, part of the technique used to decide which lines should be displayed during *hidden line removal* (see above).

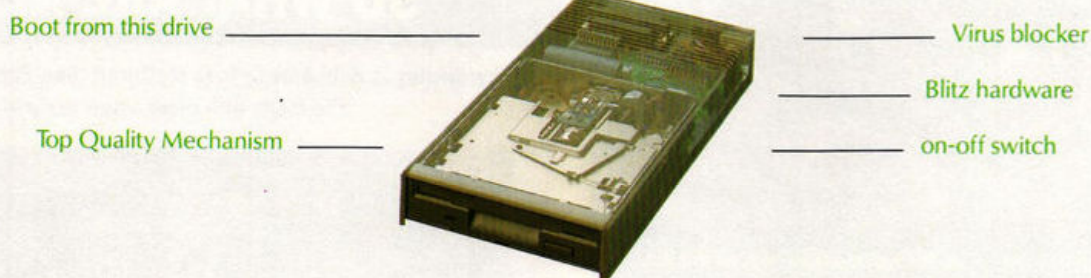
Where you can stick it.



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A BRAVE NEW WORLD

The name *Populous* has virtually passed into the English language as being synonymous with "god-game." Now there's a newer, better and altogether improved *Populous*. Ed Ricketts visited its creators, Bullfrog, to see if a star is likely to be born.

THE EFFECT IS STARTLING

The casual *Populous 2* player is likely to spend all his time throwing effects at the other player and ignoring his own people – great fun but not really the way to play.



● The rain of fire can have a devastating effect, destroying any houses and people in a localised area. It doesn't have a lasting influence, though, because the landscape isn't altered in any way.



● "Pimples" initially sound pathetic. All the effect does is to randomly raise the land slightly in a selected area. Apply it for a longer time and it causes serious problems – the area becomes almost uninhabitable.



● Convertors are small holes in the ground. When people fall into one of them they are instantly converted to the other player's allegiance, so placing these in the enemy's camp can cause mass defection.



● The earthquakes happen the way they should have happened in *Populous*. Huge rifts appear in the ground, swallowing up people and houses, should any be on the fault line. They're a pain to remove too.



● Tidal waves can only be stopped by building a sea wall. Even the smallest gap in a sea-front wall lets the wave through, whereupon it starts spreading out again, turning your rolling fields into water.



● The storm, though not a major effect, lasts for a fair time. Lightning arcs down from the clouds and strikes houses and people who promptly turn to ash, though they can sometimes survive a hit.

Ever since the release of *Populous* three years ago – the game that spawned a thousand imitations (nearly) and started a completely new genre, god-games – people have been clamouring for its sequel. It's only now that the wildly-named *Populous 2* is about to make an appearance. And it looks set to easily overtake its predecessor in popularity.

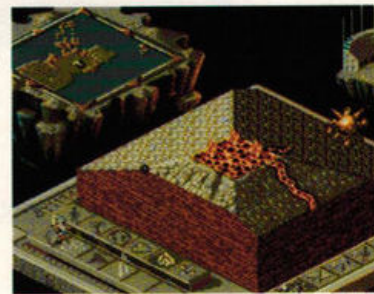
Peter Molyneux, Bullfrog's big cheese, explains the objectives behind the second game. "We wanted a game that used the same basic methods of construction as *Pop 1*, raising and low-

ering land, but one that made you care more about your people rather than going all out for world domination. We've kept the basic gameplay the same, but we wanted more effects. *Populous* was really really badly written – the effects in it were so crude. So we included everything that was lacking from the original game in *Populous 2*. But everything is a double-edged sword – it all has a good effect and a bad effect, so you can never be sure just what will happen."

Another important specification was that the game, like the first, must be in



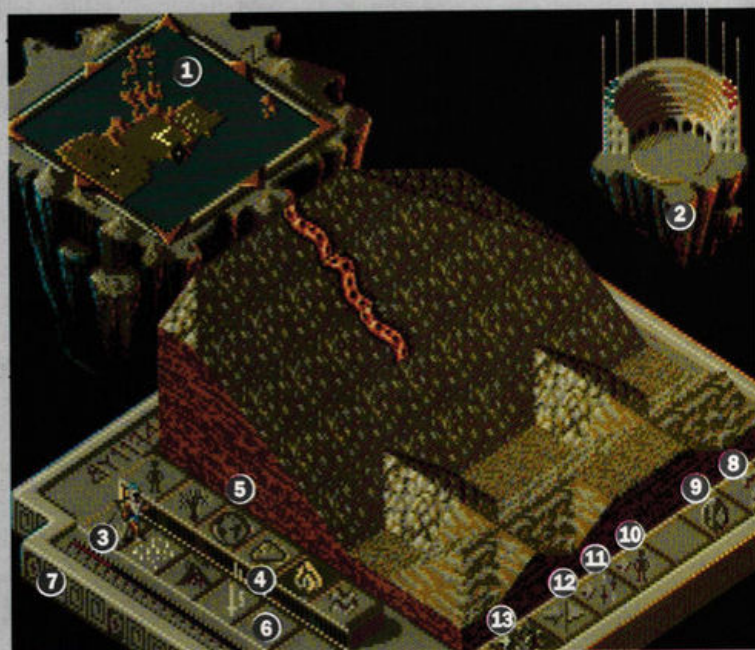
● Custom worlds can be created in the same way that they're developed in *Populous*. The panel in the top right gives you all the information you need to set up an easy-peasy world to stomp all over the opposition. Set the useable effects, intelligence rating and land effects for a tailor-made game.



● The volcano is the most spectacular effect you can use. A long animation sequence shows the land rising up. The top of the new mound then splits and lava pours out across the land making it impossible to build on that area in the future. Anything in the path of the lava is immediately destroyed.

SO WHAT ARE ALL THEM

The display is deliberately less cluttered than *Populous*, but some of the icons still need some explaining.



real time. "I hate games which flick the screen and stop the action. We wanted to design something which worked completely in real time and over which you never had complete control – you could only influence certain elements."

The game contains no original *Populous* code at all and runs at 25 frames a second, which basically means very fast. It will probably run on a 520 but there may be some features missing. "It's becoming very hard to write big games in half a meg these days," Peter says. For once, the game will certainly be hard disk installable – though you'll need 1MByte for that.

There are four sorts of game: the standard Conquest game, similar to the original *Pop*, where you complete landscapes and advance according to your score; the Problem game, where you're given a defined city and defined problems and have a time limit to solve the problems; a Challenge game, which presents you with a pre-defined city and gives you a set time to prepare for the disaster that is guaranteed to hit it; and a Custom game where you can set up your own landscapes.

The premise of *Populous 2* is this. As a god, your job is to keep your people happy, thus boosting your "manna rating." This is achieved mainly by giving them plenty of flat land to build their houses on, so they procreate and make even more happy people. Naturally, the other player (ST-controlled or human) is up to the same thing and tries to thwart you in any way he can.

Each player has a number of effects he can use to slow the other

player's progress, with the eventual aim of wiping out the opposition altogether. The manna rating dictates just which effects you're able to use, and also the strength of those effects.

That, in a nutshell, is it. But that's like saying the Sistine Chapel has some nice paintwork. Take the number of effects: there were a paltry six in *Populous*. *Populous 2* has 36, divided into

"We'll be doing a Celtic disk, for instance, and if there's the demand an Egyptian and maybe a Norse one."

■ PETER MOLYNEUX

six groups: People, Vegetation, Earth, Air, Fire and Water. According to your speciality, you're more adept at some groups than others, and some effects aren't available at all, though as you progress and become more proficient you're able to access more effects. They range from the mild to the completely devastating. In the Vegetation group, for instance, there is an effect to make trees begin to grow. These spring up gradually and improve the living conditions for your people – the good side. The bad side comes when they start spreading too rapidly and encroach upon the living space. Conversely, the most dangerous and spectacular effect

is the volcano. Rising slowly from the ground, the volcano splits at the top and starts spewing out lava, which runs down the side and onwards, burning everything in its path; houses are carried along by the flow and eventually burn up, too. Eventually the lava solidifies and forms new land, which is impossible to do anything with. There is no defence whatsoever against a volcano, so as you can imagine it's the most expensive effect in terms of manna to reach.

There are other more subtle effects, too. Fungus, for instance, is initially laid down in any pattern you choose, but grows according to the rules of Life, an old algorithm with simple rules that can create extremely complex patterns (much like a Mandelbrot set). If you know the way the algorithm works, it's possible to create such a pattern so that the fungus only spreads in the enemy's direction. Depending on whether you specialise in Vegetation effects, the fungus either infects any life it touches and kills it off or simply shifts people out of their houses – either way it's damned awkward.

Just to complicate things even further, some effects combine. A whirlwind, for instance, normally sweeps people up and carries them off towards lower ground, which generally means they're dropped off in the sea where they're more than likely to drown. As the whirlwind whips up the sea, however, it forms a whirlpool, which whizzes off toward the land and eats it away. It's this sort of behaviour which means you're never sure just how the effects are going to turn out.

People effects are among the most interesting. For each group of effects you can call a hero to aid you. These are not directly controllable – they simply head towards the enemy and do their stuff until they're killed, much like the knights in *Pop 1*. Each hero has its own foibles: the hero for the Vegetation group, after killing an enemy, splits into two; each of those parts then splits into two, and so on. Naturally the parts become weaker with each split – otherwise the hero would be almost invincible. Helen of Troy lures the enemy to follow her with a somewhat suggestive wiggle of the hips; then, when she's got enough people hanging on her every footstep, she leads them straight into the sea. Exit several gullible inhabitants.

The concept of towns has been expanded, too. Rather than having lots of disparate little houses dot-

ted round your landscape, it's to your advantage to plan your cities carefully. Not only can you lay down roads (which your people use in preference to rough ground), but you can surround an area with castle walls, effectively creating a city. It's impossible for anything to destroy these walls by raising and lowering land – only earthquakes (which cause huge rifts in the ground), certain heroes and some other effects can do it. The down side is that people won't settle near the walls, because they're scared of attack.

Cities take on a whole new meaning when you consider that saved games from *Populous 2* can be loaded into *Sim City* (and vice versa). Obviously altitude is lost and certain of the features changed (city walls become rivers, for example), but according to Molyneux there were very few problems in converting between the two game formats. The only real problem is that the *Sim City* playing area is much larger than *Pop 2*'s, so *Pop*'s cities appear as islands in the middle of a large sea when loaded into *Sim City*.

It's not only houses and cities that the people build. Sometimes they build

There were a paltry six effects in the original *Populous*. Now *Populous 2* has 36, divided into six different groups

LITTLE PICTURES, THEN?

1 Overall map of the world, which shows you and your enemy's people and houses, plus any effects currently taking place. The arrows around the edge enable you to move in the appropriate direction. Alternatively, click directly on the landscape to zoom straight in.

2 The colosseum shows you at a glance the size of each player's populations, the weapon being used by any currently selected inhabitant and its intelligence. This gives you a useful indication of when you should stop developing land and start laying into your opponents.

3 The red bar and the little running man both indicate the level of manna available for the selected group of effects

4 These bars show you at a glance how many effects in each group are available to you with your present manna level. The more manna you have available, the more impressive and devastating the effects on offer. Just remember, your opponent retaliates.

5 Clicking on these items changes the current effect group: People, Vegetation, Earth, Air, Fire and Water are the ones available.

6 These icons represent the individual effects which are available within a group.

7 Cheat icons – mess around with them and see what they do!

8 Shows information on whatever is currently selected.

9 Global options – sets things like game speed, intelligence etc.

10 Instructs people to join up with other people if they see them. Otherwise, they must settle.

11 Orders your people to fight the enemy if they can spot any, or otherwise settle.

12 Settle mode.

13 The Papal Magnet – used in the same way as the one in *Populous*.

temples in favour of certain gods. Which god it is may affect the strength of certain of your effects, but that's not the most important ramification. If a god's temple is destroyed by you in any way – an errant effect, for example – the god will be positively furious and bring his wrath down on you. Not only that, you'll be banned from using that god's effects again until you finish the landscape, which could be seriously limiting.

Populous 2 is optimistically due for release in October, but already Bullfrog are talking about add-on data disks. "All of the effects are stored as separate sections of code," Peter says, "so all a data disk would have to do is replace that particular section with the new graphics and program code. You can create completely different games – we'll be doing a Celtic disk, for instance, and if there's the demand an Egyptian and maybe a Norse one." *Populous 3* has even been mooted – but if *Populous 2* succeeds, there seems little point. As Molyneux says: "We want *Populous 2* to be the greatest game of all time." **stf**

As we write this page, Peter has said Bullfrog are looking to take the playing area up to a full screen size. This would make it one of the first games of its type to use the full screen.



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The king of the DAs

Desk Accessories can be the hero of the hour when you desperately need to format a disk inside *First Word*, and the villain of the piece when you've run out of memory (again!). But a few are destined always to wear white hats and halos. Ed Ricketts takes a look at *Harlekin 2* – a Desk Accessory that monitors its memory needs and even sets up crash barriers.

Harlekin 2

MACHINE: ALL STs

PRICE: £59.95 (£24.95 FOR UPGRADE)

FROM: HISOFT

CONTACT: ☎ 0525 718181

Take a look at the Desk menu on your Desktop. There they are, lurking in your ST and gobbling up all the memory – Desk Accessories. Six is never enough, is it? You always want that little program that does nothing remotely useful running in the background, but there's just no room for it. Unless you're a *Harlekin* user, that is. *Harlekin* was the do-it-all Desk Accessory released last year (and awar-

ded 89% in STF 12 – to order this issue, see page 136) that incorporated all the functions you could ever want, yet only took up one slot. Now it's been revamped and re-released in the guise of *Harlekin 2*.

From the main *Harlekin* menu you have access to 15 separate modules, including a text editor, a manager, a comms program, a monitor, a calculator, an ASCII table, the control panel, file and disk utilities, a RAMdisk, a printer filter, a clock and alarm, a macro program and a cuddly toy. These are identical to those in the original *Harlekin*, but their operation has changed in three main ways.

The first is that *Harlekin* now works on any size ST from the bog-standard 520 to the Mega 4. This is achieved by not having it all in memory at once, and

only loading the relevant module when you need it. Although this sounds fine in practice, for floppy disk users – 90% of ST owners – it means (a) having the *Harlekin* disk permanently handy, and (b) waiting around every time you need to access something – though it doesn't really take very long to load most modules.

The next change is in the way it uses memory. From the main menu, you allocate the total amount of



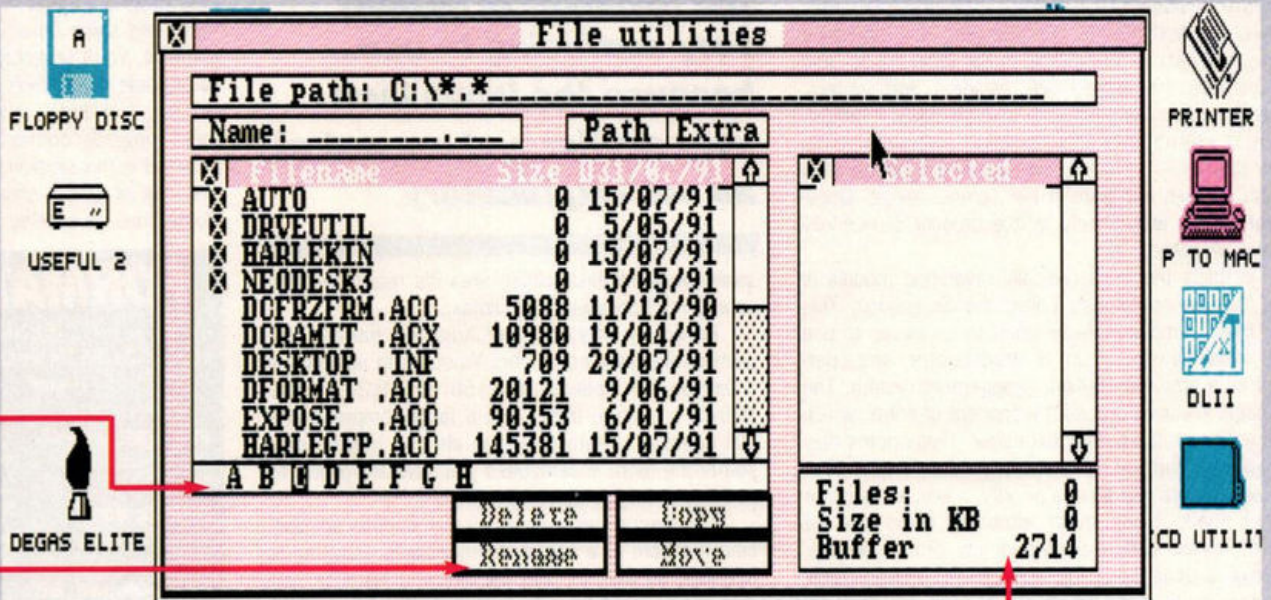
From the main *Harlekin* menu you have access to 15 separate modules including text editor, control panel, comms program, file and disk utilities...

FILE UNDER "SELECTOR"

Harlekin 2's new file selector is a godsend to everyone who's had to labour with the GEM model, and outperforms any of the current PD alternative selectors. It's also the basis for the file utility menu, which offers file copying, deleting and renaming. Similar facilities are available from the Disk menu, where you can format or copy a whole disk.

Click on these to access any currently available drive

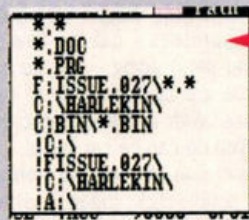
File manipulation options



Selected files for copying, deleting and so on are listed here, along with their total size at the bottom



Normal file and folder display, with date and time of creation to the right



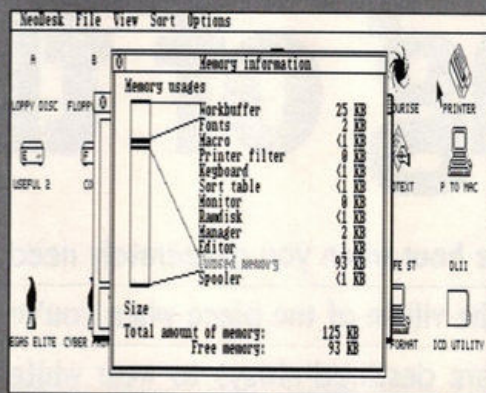
The "Path" dropdown menu gives you ten user-definable paths – click on any of them to access that folder instantly



"Extra" contains all the other bits you might need – folder creation, preferences, and file-finding utilities

WE'RE THINKING OF ADDING AN EXTENSION

A major innovation is the inclusion of *Harlekin* Programs or HPGs. HPGs are accessed from the second page of the main menu, and are basically extensions to the main *Harlekin* program. If you have a reasonable knowledge of C or assembly language you can use the supplied libraries to write your own utilities. In theory this makes the program infinitely expandable: it means that third party companies (or anyone at all) can write their own extensions to *Harlekin*, and thus customise it completely. This "extension module" idea is the same as that used by the Apple Macintosh and the new Atari Control Panel (as seen on the TT and on last month's Cover Disk).



● The most useful module supplied with *Harlekin 2* is the memory HPG, which shows you immediately how the memory pool is being used. There are others to convert the old Scrapbook to the new Manager format, and to change the system vectors *Harlekin* uses, in case of compatibility problems.

memory available to all of *Harlekin*'s modules – memory that is optionally reset-survivable, in which case all data in every module is saved in the event of a crash. This is set at boot time, and each module dynamically takes as much as it wants as and when it needs it from this pool. This means the memory is only being used by the active modules.

The last and perhaps most useful change is that you no longer need to run a separate configuration program to change macros and suchlike. Every aspect of *Harlekin 2*, with the exception of memory allocation, may be changed from the main menu, and comes into effect immediately – there's no need to save and reboot. All the information on your current set-up, including fonts, keyboard layout, RAMdisk size and so on, can be saved to a configuration file.

The text editor is fairly basic. It contains the usual cut and paste functions, as well as storage to an external clipboard that other programs may use. Source or text modes are available, the difference being that text is formattable in the latter mode, and pages may be printed with headers and footers. Search/replace functions are also included; however, there is still no form of justification. In operation, it's very speedy – up to *Protext* speed and maybe even faster, though not quite in the *Tempus* range. Document size is limited only by the amount of memory you've allocated.

Perhaps the most radically revamped module is the *Manager*, previously called the *Scrapbook*. This has been completely redesigned to be easier to use and more powerful than its predecessor, and operates as a time/information management system. The *Manager* revolves around the concept of notes, which you write with the built-in text editor. These notes may be any size and you can then assign them any or all of an icon, a date and time, a priority, a key, an alarm or a tick mark. Using these attributes notes can be listed, sorted and displayed in any order you like. Sorting is done using the **AND/OR** and **EQUALS/NOT EQUALS** icons. Say you create an icon for Personal notes and one for Office notes – you can mark a note with both of these, so sorting on notes with both Personal **AND** Office icons with the **EQUALS** icons selected will include that note. Doing the same with the **NOT EQUALS** icon includes all notes with neither a Personal nor an Office icon. Day, month and year displays give you at-a-glance reminders of selected notes with their connected dates, and the alarm can be set on any note to sound whenever you like.

You can print selected notes in a variety of ways. Priorities from A to C and a four-letter key can also be

added for further identification and sorting, and you can set notes to automatically repeat weekly, monthly or yearly, as well as automatically moving forward to the next day if you don't acknowledge them by marking them with a tick (so they keep nagging you until you go away). One nice touch is that if you have an autodial modem connected, you can automatically dial any number included in any note simply by placing the cursor on it and using the Dial icon.

The *Manager* is initially very confusing to use, even if you're used to the old *Scrapbook*, because the icons look very similar and are not at all self-explanatory. Thorough exploration is recommended before you can begin to appreciate all the *Manager*'s facilities. Whether it's actually of any use to you depends on whether you need to store information that's date dependent, because although you could use it as a

The Manager is initially very confusing to use... because the icons look very similar and are not at all self-explanatory

straightforward data-holding area it's really designed as a form of computerised Filofax.

Previously only including Xmodem transfer, the terminal program now offers Ymodem to upload and download, at speeds from 50 to 19,200 baud. There's a capture buffer and a fairly comprehensive dial directory. Characters may also be translated to something more acceptable if you have any problems sending or receiving certain codes.

The macro menu opens up tremendous possibilities. A macro is a series of keypresses assigned to one key, so that, to take the simplest instance, you can put your whole address on F10, obviating the need to type it out in full every time. Commands, too, can be assigned. If you regularly need to search through your documents replacing "tango" with "prehistoric," the necessary keypresses – call the Search menu, type in the text, and set it going – can be put on to a single key. Macros are also available to call each of *Harlekin*'s modules. With a little thought the amount of tedious typing you do can be cut in half.

From the Control Panel you can do the normal things like changing the double-click speed and the keyboard repeat rate, but there's a lot more to it than

that. From here you can edit, load and save both the system fonts and the keyboard layout, accelerate the mouse and activate a screen saver.

If you've ever used a monitor you know how useful they can sometimes be. *Harlekin*'s monitor gives you disk, file and memory editing, a search (but not, unfortunately, replace) facility, hex/ASCII display and a printer dump. All the functions are straightforward to use and well error-protected, though it would have been nice to have a full-window ASCII display.

You can change the size of the RAMdisk at any time, but only within the limits of the allocated memory. Any files present in the RAMdisk can be saved as one large contiguous lump. This file is then loaded into the RAMdisk at boot-up, cutting out the need to fiddle about with lots of individual files.

Harlekin's printer filter intercepts characters sent from the ST to the printer and outputs the correct code for the printer to use. Most printers, for instance, use ASCII code 35 for the £ sign, while the ST uses 156. The filter changes every occurrence of 35 to 156. Filters are written as plain ASCII text files, following some fairly complex rules – so unless you know a lot about the way printers and their software works, you'd best get a tech-head to do it for you.

There are several other minor utilities. Printer and RS232 settings may be altered, as can the time and date. There's an on-screen clock with an alarm, a calculator (which unfortunately hasn't changed at all from the first version – a shame because it's very basic and easy to overflow), and an ASCII table which displays the entire ST character set with its codes.

If you've never used *Harlekin* before, get hold of *Harlekin 2*. It has every utility you could want, and being an Accessory, it's always available (provided there's a GEM menu present, of course). No one could pretend that £60 for a Desk Accessory is cheap, but if you can afford it, go for it. For existing *Harlekin* users, the choice is a little more difficult. There are really very few functional changes from the first program; apart from a redesign of the main menu and some other cosmetic touches, it's virtually identical. You'll probably only want to spend the £25 to upgrade if you can't stand being without the latest version. And there's also the fact that when another major upgrade comes along, you might wish you'd invested in this version. On the whole, *Harlekin* is still the king of DAs – though its slogan, "Dreams Can Come True," is pushing it just a tad. **stf**

FORMAT RATINGS

Harlekin 2 £59.95

(£24.95 for upgrade from Harlekin 1).

Hisoft ☎ 0525 718181

FEATURES: 94%

An immense number of utilities included – everything short of a DTP program

SPEED: 90%

Uses its own screen display routines, so it's very fast. Disk access for floppy users can be annoying

EASE OF USE: 86%

The *Manager* is the worst culprit here, but in general everything's point and click

RESULTS: 92%

Does very little new, but it does it well

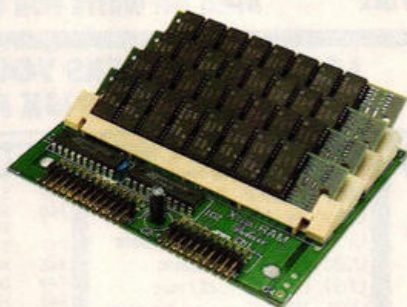
FORMAT VALUE: 91%

Not by any means cheap (particularly if you're upgrading), but well worth it

THE COMPETITION

There are hundreds and hundreds of PD programs that cover some of the areas *Harlekin* does, and even some DAs that attempt the same job, such as *James the Butler*, but nothing comes close. *Mortimer 2* from Kuma, coming soon, might pose a threat

Choosing a memory upgrade for your Atari ST just got easier!



Once Frontier's XTRA-RAM *Deluxe* is installed in your ST, you can upgrade in stages to 4MB whenever you like - it couldn't be easier. Includes a two year guarantee and a no-quibble ten day money back offer.

Is your ST always running out of memory? Frontier Software's new XTRA-RAM Deluxe is the easy to fit and simple to upgrade memory expansion that you've been waiting for.

Thousands of ST users have already upgraded their STs to 1MB or 2½MB using the original XTRA-RAM in their homes and offices without having to send their computers away. Now Frontier, makers of the original XTRA-RAM, introduce their new memory upgrade - The XTRA-RAM Deluxe.

The experience, quality and expertise that went into the best selling XTRA-RAM has been applied to the new XTRA-RAM Deluxe. The XTRA-RAM Deluxe will upgrade your Atari STFM to 1MB then 2½MB and then 4MB with easy to install SIMM memory cards. Your Mega 1ST can be upgraded to 2MB and then to 4MB. Mega 2STs can be expanded to the full 4MB. Once the XTRA-RAM Deluxe is installed in your ST, you can choose when to upgrade further - you simply change or add SIMM boards - just like the ST^E. You can even use these SIMM boards if you later upgrade to the ST^E.

Easy To Fit

Installation of the XTRA-RAM Deluxe couldn't be easier. Following the instructions laid out in our simple to follow manual which is written with the non-technical reader in mind, you disassemble your STFM or Mega ST, plug the XTRA-RAM Deluxe into two places inside your computer and reassemble it. The whole process takes around 1½ hours and most STs will not require any soldering whatsoever.

The XTRA-RAM Deluxe fits all MMU chips (including the 100109) whether they are soldered down or not. If your ST has a soldered down Video Shifter chip or a 101601 type MMU then some soldering will be required. You can do this soldering

yourself or Frontier or your dealer can do it for you for a small extra charge. If your ST has a socketed Video Shifter chip and an MMU which isn't the 101601 type, then you can fit the XTRA-RAM Deluxe without any soldering whatsoever. If you need any further explanation of this, contact Frontier direct.

No Need To Stop At 1MB or 2½MB

Most memory upgrades for the Atari STs will give you a simple upgrade to 1MB for about the same price as the XTRA-RAM Deluxe. Some of these upgrades may be as easy to fit as the XTRA-RAM Deluxe, but they do not allow you to expand your ST further. Once the XTRA-RAM Deluxe is installed in your ST, all you have to do to upgrade further to 2½MB or 4MB is install extra SIMM memory cards into the empty sockets on the XTRA-RAM Deluxe. This is a very simple process which takes less than ½ hour.

Don't restrict yourself to just 1MB. Make sure that you choose an upgrade, like the XTRA-RAM Deluxe, which can grow with your needs.

Totally Compatible

The extra memory that the XTRA-RAM Deluxe gives your ST is totally compatible with all of your ST programs. The ST's memory controller chip logs in the extra memory and makes it available for your programs. You will automatically get extra memory for DTP, word processing, MIDI, running the Atari Laser printer and everything else that you use your ST for.

Software Included

Each XTRA-RAM Deluxe upgrade is



Designed and Manufactured in the UK. Frontier also manufacture memory upgrades for the Atari ST^E.

Available from your local dealer, or direct from:



Frontier Software

supplied with free RAM disk and printer spooler software and a free RAM testing program so that you know with certainty that your installation has worked.

Satisfaction Guaranteed

The XTRA-RAM Deluxe is supplied under Frontier's ten day money back offer - if you aren't satisfied with the XTRA-RAM Deluxe for any reason you can return it to the place of purchase within ten days for a full refund (participating resellers only). The XTRA-RAM Deluxe also carries a full two years' guarantee. The XTRA-RAM Deluxe is designed and manufactured in the UK. Unlike some ST upgrades, Frontier guarantee that each XTRA-RAM Deluxe uses only brand new SIMM memory boards - making your ST and its memory upgrade more reliable both now and in the future.

Prices

Frontier supply the XTRA-RAM Deluxe in four ways:

- ◆ XTRA-RAM Deluxe Unpopulated (without memory) £39.99
- ◆ XTRA-RAM Deluxe ½MB upgrades your 520STFM to 1MB (can later upgrade your STFM to 2½MB and then 4MB) £69.99
- ◆ XTRA-RAM Deluxe 2MB upgrades your 520STFM, 1040ST to 2½MB, Mega 1ST to 2MB or your Mega 2ST to 4MB (can later upgrade your ST or Mega 1ST to 4MB) £119.99
- ◆ XTRA-RAM Deluxe 4MB upgrades your 520STFM, 1040ST and Mega 1ST to 4MB £199.99

Please add £3.00 postage and packing to all orders under £120.00. All prices include VAT. Frontier accepts payment by Visa, Access, Switch, cheque or postal order. Prices subject to change without notice. Goods subject to availability. Specification subject to change without notice.



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PUBLIC SECTOR

GAMES

EAGLESTAR

Prophecy PD - All Colour STs

In something of a break from tradition, someone has written an extremely good adventure with the ST Adventure Creator (STAC). This futuristic game is set on a prison ship, sometime in the distant future. STAC's parser is quite sophisticated, meaning that it can understand quite long sentences and it does not allow you to "pick up north." There are some detailed graphics to accompany the game which has a nice tense feel to it. Foreboding.

STF RATING - 83%



● Things aren't going well on the good ship *Eaglestar*. For a start, some bugger's gone and bunged you in a cell, and then there's the legions of killer droids who'd like to laser your liver. Give me a cruise in a punt down the Hoover dam anyway.

TIME BANDIT

From the 2nd PD.ST games pack - Disk GP002

Gorden Bennet, now here's an old game. *Time Bandit* was just about the first ever game for the ST. It's a romp around fantasy land game in which you've got to collect keys and mash monsters and other sundry baddies.



● Oh no, there's a whopping great eyeball growing right out of my belly button. What are the guys down the pub going to say: "keeping a close eye on things, eye eye?" These jokes just got cornea and cornea.

The gameplay is a trifle bland, but it's still a bit of a giggle and there is a lot of terrain to explore. What's more the two player option spices things up a bit. Oldie, mouldy, and not very goldie.

STF RATING - 70%

ELVEN CRYSTALS

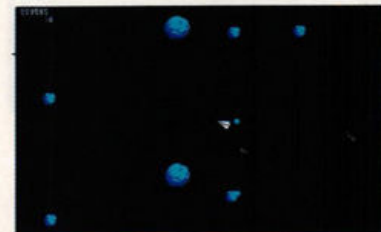
The Surrey PD Club - Disk GAM012



● Dear old STAC. Whatever would we do without all these absorbing adventures that were created with it? Erm, probably go down the boozer and have a pint of "Don't you just hate it when that happens?" Fosters.

Another STAC written adventure, this time by a chap called Fink who belongs to the Angel Gang group (and yes, I do read 2000AD). Bit grim, this one - seems to me that you die every three moves. The text descriptions are extremely gory - loads of vein severing and lungs swallowing quagmire mud. Cheery stuff indeed. Apart from all the dying, it's a bit of blast, though some of the graphics are a tad on the simplistic side. Hint: to escape the fog at the beginning travel S,W,N,W,S,S. Worked for me anyway.

STF RATING - 77%



● Admittedly it doesn't look like a terribly frenzied game, but those *Megaroids* are travelling at a fair old whack and I did manage to reach the third level!

MEGARIDS

From the 2nd PD.ST games pack - Disk GP002

Again, a quite elderly game, but it's surfaced again in this groovy games pack from the boys at PD.ST. You shouldn't have much problem guessing the theme of the game from the title - it's an

"Barty Brimstone's Talent Agency, Babs speaking. Can I help you? No, I'm sorry, Lionel the lizard licker is still on parole... Nope, sorry, Clare and her amazing climbing cleavage are standing in for Wogan this week... I can give you Andy Hutchinson though... Well, I'm sorry, it's him or nothing. All right, so I'll book him in for a three page review of Public Domain software for the usual fee of three Jaffa cakes... Lovely."

updated asteroids game. The controls are all very standard: left, right, thrust, fire and hyperspace. Scrolling is smooth and the gameplay gets nice and frantic. Most oft used expression when playing this game: "Blimmin' hell, there's 23 little boulders on me arse. Hit hyperspace double quick, matey."

STF RATING - 83%

UTILITIES

WORDSEARCH GENERATOR

The South West Software Library - Disk 1649 - All colour STs

Ever wandered around your local newsagents and seen all those Word-grid puzzle books, usually adorned with

an attractive looking girl in 1970s clothes? Well, you could make your fortune producing exactly that kind of book with this nifty program. Up to 100 words can be entered into the program. These are then laid out on a grid with all the words scattered around a maze of other letters. The objective is then to pick out the words. The whole puzzle can then be printed out and handed over to the nearest grandmother/train spotter. Triff.

STF RATING - 81%

● All right then guys and girls. If you think you're clever, find all the words on the left in the grid below and win yourself a free game. If you don't want to ruin your issue, nip down the library and photocopy it. Send your answers to Smelly Sockets, ST FORMAT, 29 Monmouth Street, Bath, Avon. BA1 2DL.

WORD SEARCH PUZZLE GENERATOR		Program by DAN CLEVER DICKY
WORD LIST		
1	ST FORMAT	VLCRETSIS STN ATXIRONEHMBELHGTNHYEJUXTO BOCQVEZUBGERAC "YPPAH" EVETSNAXFCVEOPZ MFVUG TRA ENT EVETSDAN & MARK SPLITTERSG XMYKXKEANDGKDDKGRGHTSILBUP ERUTUPPSR JOMARTIN THE HIPPYABEGHUMDPXLKOFEBNSMO ZZHLONLOEPFOPHFUGXTLEKXHLUQDDMZKYSKHEO FNENDRIX THE DOGGIELPTDLNNYGMWYGNRXLU T1JBUBRJHUCGNNUGRXXJATDBOJMKOVJXLNTILY VOEEPMUPCZJXMMWOD BTNRQCCXCCJOSJMSVUV KMSITEKCIK DEXHGAQS JVRHOSAXEMARDNCKSF T JZONJEKHXDGXSQECREWCUCUHF JLJMSPYCZRUSE GUGZPETZMBAUJPFMLMHFTMZJRN PSEKJHTON CJDGMARK HIGHAMLEAC QNZZUMLTRSTYVUCD EBMQUSLWYNGZFCMRTHFTTHASADTEHAFJLOHXR DEPPZTLCCNARKUTLUTHFSPCNGSDDEMMATJCKET HZSSCDSTCCCKXLLTITRURKSKNNHAYTUQTL POKRICTESDCSRHFDUPITED'S SHALL HIGYBRSS CINSUNDQABQOODTRAGSPLISXUHELLO MARIEYU WANDY HUTCHINSONZDRY MALL STONINGDOCEXMO YNJRPTDNDXASQOJCVDSEDS'S LARGE WIGKNDG
2	GROOVY TENDRILS	
3	FUTURE PUBLISHING	
4	ED RICKETTS	
5	ANDY HUTCHINSON	
6	NEIL JACKSON	
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11	HENDRIXIA HIS SISTER	
12	STEVE THE ART GUY	
13	MARTIN THE HIPPY	
14	DAN & MARK SPLITTERS	
15	DRY MALL STONING	
16	ED'S LARGE WIG	
17	ED'S SMALL WIG	
18	HELLO MARIE	
19	SMELLY SOCKETS	
20		

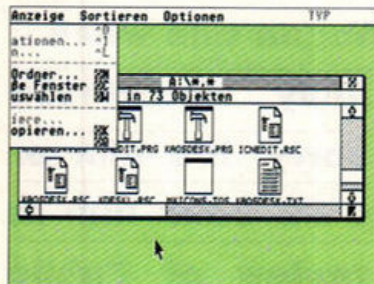
KAOSDESK

South West Software Library -
Disk 1736



Lawks-a-lordy, another Desktop replacement. In common with Gemini (a very good Desktop available from all PD libraries), KaosDesk is a very professional-looking German program. The files sit inside your boot disk's Auto folder and effectively replace the bog-standard green Desktop. Custom icons and environmental variables have been added, along with improved window handling and disk functions. Well worth bunging on your boot-disk.

STF RATING - 90%



● Personally, I wouldn't have named my brilliant new Desktop replacement *Kaosdesk*. Doesn't exactly instill a feeling of safety and motherly cuddliness, does it?

SPELL-ST

The South West Software Library -
Disk 1642 - All STs

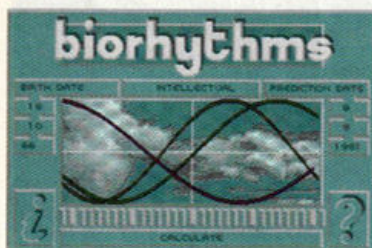
Most professional word processing packages have a spelling checker built in, but if you're using a Public Domain program then the odds are that you have to resort to the old dictionary. This program checks through a document, highlighting incorrect spellings and giving the occurrence of these mistakes. You can then go through the program and bung in the right spelling.

STF RATING - 71%

BIORHYTHMS

Jennix PD - Disk 388 - All colour STs

It seems that as long as there are computers, there will be naff biorhythm programs which claim to predict what sort



● Sheesh, doesn't look like I'm going to have a terribly mentally stimulating day! Still, these biorhythms are about as accurate as Annie the Pot-boiler's bunion divination exercises in Bath Market Square for the tourists.

of day you're going to have, just from your date of birth. I mean come on, how do they know that the poll tax vultures, the Jehovah annoyance brigade or the crusty colonel from next door's incontinent poodle won't be around to badger you? Hurumph. Anyway, the program's pleasing to look at and moderately user obedient. The predictions, of course, are a load of old tripe, but then some people need this kind of thing as an emotional crutch. It's just graphically pleasing cobbles.

STF RATING - 40%

DEMOS

A LITTLE MUSIC DEMO

Riverdene - All Colour STs



No sprites, no bitplanes, no parallax scrolling, just excellent music. The Inner Circle boys have compiled some superb tracker music on this demo. Normally tracker music is simply an exercise in squeezing as many samples as possible into a really fast tune. The guys that wrote these tunes actually paid some attention to little things like melody. They've chosen their samples advisedly and produced some corking tunes. Other groups listen up: this is how you write tracker music.

STF RATING - 93%

THINGS NOT TO DO

Riverdene - All Colour STs



Excellent demo idea this: take some International Karate Plus sprites, add some graphics of your own and blend with a bit of sick humour. The Inner Circle guys strike again with this small demo. There are seven things not to do, ranging from don't hit your brother to don't damage other people's equipment. In between jokes, the guys reveal that two of the demo group have gone off to work for Entertainment International. Nice to see demo coders making good. Sick but slick.

STF RATING - 91%



● Wise words indeed. This excellent demo (and who said we don't like demos?) is called *Things Not to Do* and the sprites are from *International Karate Plus*. Don't know how often this eventuality would arise though.

SOMETHING FOR ALL THE FAMILY

£20

£30

Reader Lloyd Hopkins from Essex checked out his ancestors with the help of *Genealogy* and earns himself £25 for telling us about it. If you think you're capable of writing a good review of a piece of PD software and wouldn't mind seeing your name in print, send your review to: PD reviews, ST FORMAT, 30 Monmouth Street, Bath, Avon BA1 2BW. Make sure your review is no more than 200 words long, and we need it on disk as an ASCII file without hard carriage returns at the end of each line. Include the name of the PD library you got the program from, a printout of your review and a copy of the program - and your name and address. Sorry, we are unable to return any contributions.

GENEALOGY

Goodmans PDL



Those of you who are interested in genealogy know that drawing up a family tree can be a long and sometimes frustrating task, especially when you make a mistake and have to start again from scratch!

Here is a package which contains a number of programs which can be of assistance to the genealogist.

Family Tree is designed to print a family tree from the information about birth place/date, death place/date and parent/child relationships given to it by the user. The resulting trees are clear and well set out.

However, the program does have its

limitations. Perhaps a more experienced genealogist could use this program to produce a framework on which to base a far more detailed, handwritten tree. Nevertheless, the program is still a valuable and powerful tool.

History provides the facility for the genealogist to store detailed information relating to births/baptisms, marriages and deaths/burials, enabling the user to access this information with great ease and speed and also supplies data for *Family Tree*.

The only criticism I could make of *Genealogy* is that the user interface could perhaps do with improving, although it is perfectly useable and functional in its current form. All in all, this is a cracking PD package and well worth a gold.

STF RATING 90%

cial, but then, listened to through an STE they sound a whole lot better. One for the collection.

STF RATING - 85%

ART AND MUSIC

STATE OF THE ART

Riverdene PDL - Disk DEM941ST

After a severe lack of Megademos over the last few months, a whole glut have appeared on the demo scene. This one is from the Wild Boys and features a



● Let's face it, people with brains wouldn't give a XXXX for anything else. The *Movie* demo was written especially for Atari. However, they'd have been far better off using the *Acid* demo. Talk about blowing your street cred.

STE MOVIE DEMO

Prophecy PDL - Disk Source 58 - All Colour STEs

Three demos on one disk just for all you STE owners out there. The *STE Movie* demo features some sampled DMA chip sound and a glimpse of the extended palette. The *STE Acid* demo is by one AN Cool of the Carebears. It's a long sampled music track with loads of bass. The *Tracker* on the disk is nothing spe-



● All right, so it's balls again. But hey, these ones move really fast, honestly. Come on, guys, how much time would it take you to design some different shaped sprites?

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variety of tried (meaning done before) and tested (as in everyone else has done one) themes. Vectorballs, fullscreen demos, 3D scrolls and lamer tests, they're all in here. Admittedly the demos are polished, but you can't help feeling that these guys could come up with something original. Best of the crop is their Vectorballs screen. Pretty bland really.

STF RATING - 75%

KINKY BOOTS

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Wicked demo this. Anyone remember that dreadful sixties song all about the joys of leather boots? Well this is a brilliantly sampled demo of the whole song. Yep, it's all here: Patrick McNee singing out of key about "naughty little schoolgirls" and Honor Blackman running through an entire boots back catalogue. Frothy, fun and frivolous.

STF RATING - 92%

DNA

The Surrey PD Club - Disk DEM099 - All colour STs

The mysteries of life reduced to a chemical level it isn't. This is the group DNA's version of La Serenissima committed to floppy. Not much else you can



● Call me weird, call me cracked, call me Nigel, but boots just don't turn me on. I mean all that leather covering up what would otherwise be beautifully caressable.. (this caption has been terminated due to a hefty adverse pervy factor).

say about it really. The whole song's in there, though as usual it all sounds pretty crap through a TV or monitor speaker which kind of negates the point. An extremely duff scroll text wibbles across the screen while the tune plays and urgh... c'est ca.

STF RATING - 62%

KLF-91

Nightshift PD - Disk NS12 - All colour STs

"This is what the KLF is all about, also known as the justified ancients of Mu-mu." I find this disk deeply ironic. Those arch-samplers of the music world KLF have been sampled themselves and

bunged onto a disk, complete with a blagged screen from the baseball game RBI-2. The sample is of a superior, if slightly tinny, quality. The whole song's here, so if you've got an STE or a Hi-fi lead for your STFM, load it up and crank up the volume. KLF is gonna rock you.

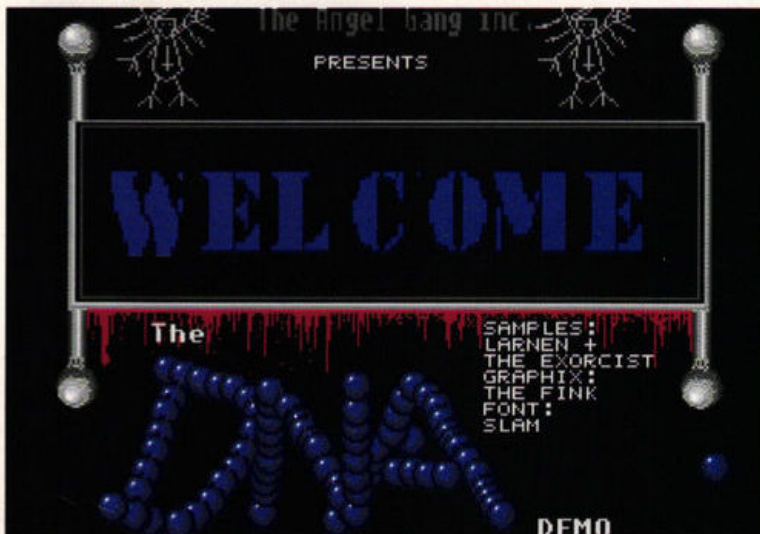
STF RATING - 80%

PROTOZOA TRACKER TUNES

Prophecy PDL - All colour STs

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STF RATING - 73%



● La Serenissima is one of those tunes that was always begging to be lumbered with a hip-hop tune. DNA from Bristol did it best, but they weren't the first. Check out Warehouse Raves collection 2 in your local record shop if you don't believe me.

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© When you need extra data storage capacity, faster data access, or more space for your files, one of these may be the answer. Here are the top 15 ST hard drives.

Drive a hard bargain

Whatever you use your ST for – music or DTP, mathematical modelling or databases, animation or even just game-playing – one day you're sure to find you need more memory. You may want to store a big music sample or just avoid that tedious disk swapping when one of today's huge games needs to load in a new graphics sequence. The solution is a hard drive. Ashley Shepherd rounds up 15 of the best currently available for your ST.

TEN REASONS FOR BUYING A HARD DRIVE

1. Speed for compiling programs
2. Capacity for storing databases
3. Capacity for storing large music samples
4. Installing games such as *Wonderland* for fast loading of graphics
5. Convenience – storing many programs or utilities in one place
6. Storing and fast retrieval of desktop publishing documents
7. Storing many word processing documents in one place
8. Speed for sampling directly to hard drive and fast playback
9. Producing a graphical animation for presentations
10. Mathematical modelling – fractals, molecular analysis

Hard drives are probably the most useful peripherals you can attach to your ST. They are simply data storage devices, and much like floppy disks they have tracks, sectors and cylinders. The difference is that hard drive capacities start at 20MBytes and can go up to several gigabytes (millions of kilobytes); they have access times as little as 11ms (11 thousandths of a second), compared to several whole seconds for a floppy disk, and transfer rates as high as 3MBytes/second – compare this to the time it takes to read four double-sided floppies!

This vastly increased memory and speed means you can have the capacity to store hefty music samples or DTP documents, save complex animation sequences or mathematically-modelled fractals, use the latest music software to sample direct to hard drive and even install sprawling games like *Wonderland* straight onto hard drive to eliminate time-consuming disk swapping and speed up loading immeasurably.

HOW DO THEY WORK?

Floppy disks are just that: inside the hard plastic case there is simply one little bendable plastic platter covered in magnetised iron particles. The platter rotates at about 300 rpm, and the drive has one or two read/write heads, depending on whether it is single or double sided. In operation, these heads actually touch the disk, which is why you can wear floppy disks out over time.

Hard drives, by contrast, can have several platters, and these are made of solid aluminium. They spin at about 3,600 rpm and the read/write heads don't actually touch the disk's surface – they travel just a couple of microns away from it, moving in unison during a read or write. To put this in perspective: the distance between the heads and the platter of a hard drive is

so small that a single smoke particle, too small to be seen with the human eye, can wreck a hard disk beyond repair – yet another good reason not to smoke near your ST setup. More common are head crashes, when the heads literally hit the disk platter. Imagine two pieces of metal hitting each other at 3,600 rpm. It makes quite a mess and you can kiss goodbye to your data. It doesn't happen very often – though some drive mechanisms, such as the Syquest used in the Atari SH/Megafile drives and some others, are notoriously prone to head crashes. The risk of this, no matter how remote, is why backing-up your data is so important.

WHAT TO LOOK FOR

There are many different hard drive manufacturers, all making different drive mechanisms, and there are two types of hard drive available – fixed and removable. So what should you look for in a hard drive?

It very much comes down to what you want. Do you want a high data transfer rate for sampling? Do you want fast access time for database work? Bearing in mind that once you have the space it seems to disappear very quickly, how much data are you likely to want to store? And, very importantly, how much are you prepared to spend?

Whatever the answers to these questions, one feature you ought to consider is **auto-parking**. "Parking" your drive's heads means moving them to a safe place on the disk platters where no data is stored – usually the innermost part of the platters – so that if you jolt the drive and the heads do touch the disk surface no data can be destroyed. (We hasten to add that you should let the drive stop spinning before moving it, or otherwise the heads could still get damaged.) Auto-parking is when the heads automatically park the moment the power is switched off. This is normally achieved by a spring.

Should you wish to connect several peripherals to your ST's DMA port, such as other hard drives or the Atari laser printer, then you ought to check that the hard drive has a **through-port**, making it "chainable." It also helps to be able to change the drive's DMA address, so your ST knows which chained device it is talking to.

One feature many hard drives include is **caching** – the ability to "cache" or reserve some RAM for frequently-called data, saving head travel and speeding data recall still further. However, caching is only any good if you have at least 1MByte of memory, because otherwise you

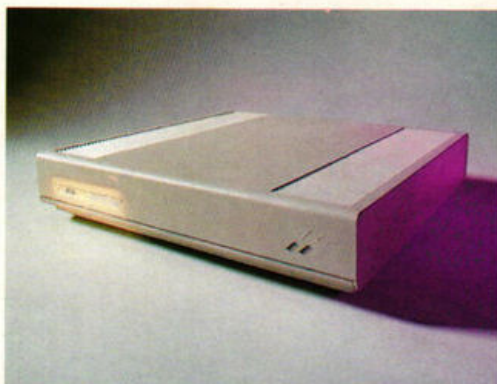
might not have enough memory to run your programs as well. By the time you've loaded your Accessories and the caches, you might have used some

400KBytes – not much left if you have a standard 520! If you only have a 512KByte machine, make sure you look at the un-cached timings in the speed comparison table on page 60.

All the drives tested came ready **formatted** and complete with all relevant **utilities** to get started. Several, however, came without a **plug** on the end of the power lead. If you spend £300 or more on a hard drive, the least you could expect is a plug!

● How they work: p 56 ● Speed table: p 60

**WIN THREE
PROTAR HARD
DRIVES – SEE
PAGE 150**

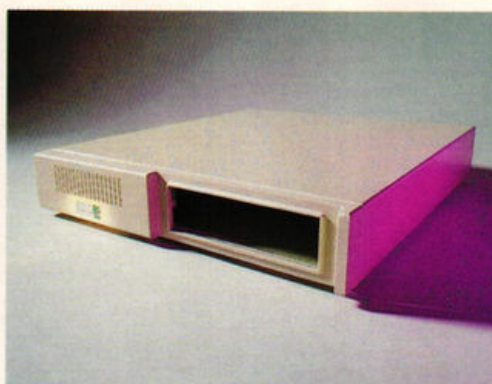
**ATARI MEGAFILE 30 £369**

Prices start at **£369** for 30MByte version
60MByte largest capacity
Comes with 12 month warranty
Silica Systems ☎ 081 309 1111

The Atari drive came without a plug on the lead, but it did have comprehensive installation instructions which made life more bearable. It has power and "drive busy" lights on the front. The size is 70x335x335mm and it fits nicely on a Mega ST with a monitor on top. Its lead is the shortest of those on review, and this would make life difficult for 520 or 1040 owners. There are both DMA in and out ports on the drive, and the DMA address can be changed, but you have to take the drive to an Atari dealer to get this done. There are no utilities as such supplied, just enough to get you going. It has the noisiest fan and heads of all the drives, and is by far the slowest. The only good thing about the Megafile is that you can guarantee it works, since it doesn't use SCSI or the ST's memory for a cache. Unless you are worried about compatibility, there's little reason for seriously considering this very outdated drive.

RATINGS

EASE OF INSTALLATION 75%
FEATURES 70%
SPEED 65%
NOISE/HEAT PREVENTION 68%
FORMAT VALUE 60%

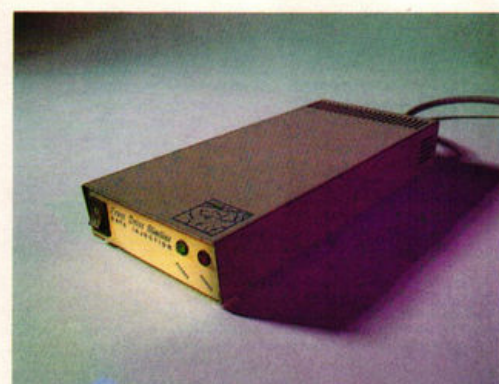
**THIRD COAST 32MBYTE £299**

Prices start at **£299** for 32MByte version
106MByte largest capacity
Comes with 12 month warranty
Third Coast Technologies ☎ 0257 472444

This drive has a large case (70x350x420mm), but it is rugged enough to withstand the weight of a monitor. The length of the lead also means it can be placed behind a 520 or 1040 ST. Installation of the drive is simple, although it has no real instructions with it, and it was the only drive that came with a manual giving technical details of the drive mechanism. The power switch is inconveniently on the back, but there is a "drive busy" light on the front and both DMA in and out ports. The DMA address can be changed by opening the case and altering a jumper. The drive has a 64K cache in the case, auto-booting, auto-parking and automatic bad block replacement, and it is extremely quiet in operation. It comes with a clock as standard and several utilities are supplied, such as the Turtle backup software, a tape driver and a virus killer. It is also the overall fastest drive. Good value, reasonable quality.

RATINGS

EASE OF INSTALLATION 75%
FEATURES 90%
SPEED 95%
NOISE/HEAT PREVENTION 95%
FORMAT VALUE 85%

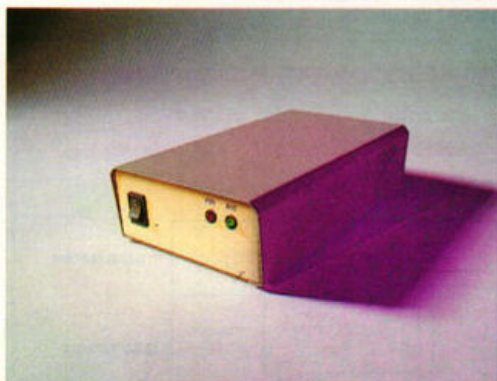
**POWER 40MBYTE SLIMLINE £299**

Prices start at **£299** for 40MByte version
Comes with 12 month warranty
Power Computing ☎ 0234 843388

Power Computing's slimline drive is just that, measuring a compact 240x110x40mm. It has the power switch on the front, along with the "drive busy" and power lights, and can auto-boot and auto-park. Unfortunately, the compact size is not quite the benefit it might seem to be at first glance. The drive has a big and bulky external power supply and arrived without a plug. Because of its very small size, there is no DMA out port, making the connection of any other peripheral to the DMA port impossible. The DMA cable has screws to connect it to the ST, rather than thumbscrews, making it necessary to get tools out to connect it. The cable is also fixed into the drive, making it impossible to replace should it ever get damaged. This drive is noisy in operation, and you cannot alter the DMA address. Very inflexible, definitely not for the serious user, but quite quick and cheap.

RATINGS

EASE OF INSTALLATION 75%
FEATURES 86%
SPEED 88%
NOISE/HEAT PREVENTION 83%
FORMAT VALUE 74%

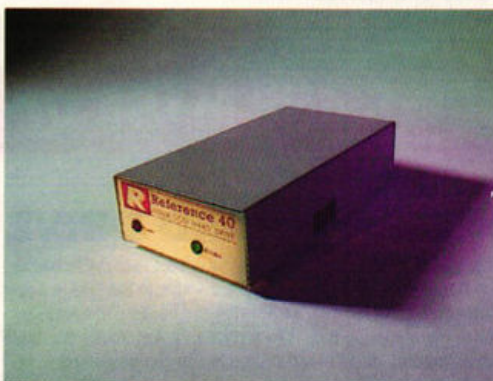
**POWER 40MBYTE £329**

Prices start at **£329** for 40MByte version
100 MByte largest capacity
Comes with 12 month warranty
Power Computing ☎ 0234 843388

The installation of this drive is quite simple, although there are no instructions on how to connect it to the ST. It comes with the ICD manual and utilities, and can auto-boot and auto-park. This drive measures 55x120x210mm and has a small but chunky external power supply. It has DMA in and out ports, but there is no way to change the DMA address. The power switch and both power and "drive busy" lights are on the front. There is a write-protect switch on the back to safeguard data, but it can only be applied to the whole disk. In use the drive is very noisy. If you only want a cheap drive it's worth a look, but it's not really for the serious user – especially since you can't alter the DMA address.

RATINGS

EASE OF INSTALLATION 88%
FEATURES 90%
SPEED 82%
NOISE/HEAT PREVENTION 85%
FORMAT VALUE 77%

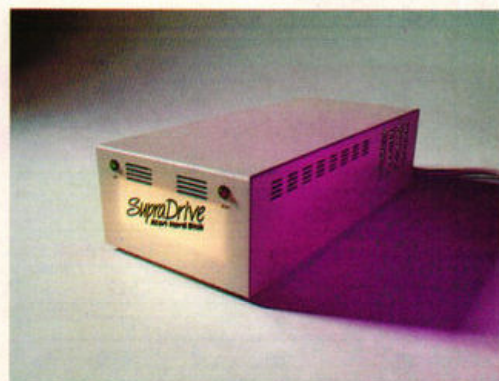
**REFERENCE 40 £349**

Prices start at **£349** for 40MByte version
100MByte largest capacity
Comes with 12 month warranty
Evesham Micros ☎ 0386 765500

Installation of the Reference drive is fairly simple – just as well, since it has the poorest installation manual of them all. However, the drive does come with the ICD utilities, and the ICD manual is extremely informative. This is the only drive that wouldn't auto-boot. It is very compact (50x190x100mm), but it has a big, bulky external power supply. The drive has no switch itself. The fan is quite noisy, although the heads are fairly quiet. There are both DMA in and out ports, but no way to alter the DMA address. Power and "drive busy" lights are on the front, and the lead is long enough to place it either side of the ST. Speed is about average, and it's worth looking at if you want a cheap drive and don't mind the inconveniences.

RATINGS

EASE OF INSTALLATION 70%
FEATURES 83%
SPEED 85%
NOISE/HEAT PREVENTION 73%
FORMAT VALUE 73%

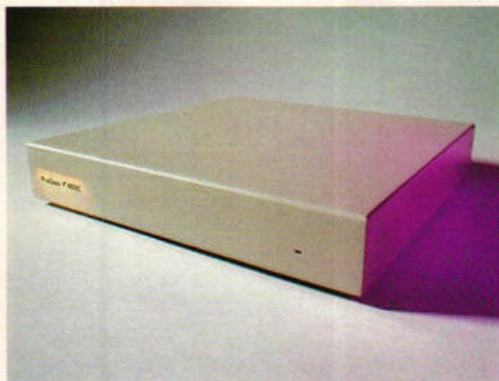
**SUPRADRIVE 40MBYTE £399**

Prices start at **£399** for 52MByte Version
105MByte largest capacity
Comes with 12 month warranty
Surface (UK) Ltd ☎ 081 566 6677

Supra were one of the first alternative hard drive suppliers for the ST, and at the time their drives were best performers. This one is 80x290x140mm in size and has DMA in and out ports and also a SCSI port. This model is due to be replaced by a 52MByte unit for the same price. When first connected, the test unit failed to boot, but Surface readily explained the problem, and once we changed the DMA number the drive worked very well. It includes auto-booting, a clock and some utilities. It has both power and "drive busy" lights, and in operation is fairly quiet and reasonably fast, but does not auto-park on power-off. Not a bad performer, but it's expensive for the performance. However, this may change with the new model.

RATINGS

EASE OF INSTALLATION 85%
FEATURES 85%
SPEED 79%
NOISE/HEAT PREVENTION 88%
FORMAT VALUE 75%

**PROTAR 40DC £423**

Prices start at **£280** for the 20MByte
160MByte largest capacity
12 or 24 month warranty
Protar ☎ 0923 54133



The German-made Protar drive is very well built, a chunky 65x340x340mm and looks very smart. Installation is very simple and very well explained in the manual. The utilities supplied are of the highest quality, even recognising other manufacturers' hard drives, and include password and write protection on the various partitions. There are also some other utilities such as a screen saver, but unless you can read German you're out of luck. (On booting, the Protar also sets all your icons up in German.) The drive is very quiet in operation and you can save your partition information to a floppy for recovery purposes. The drive is auto-booting and auto-parking and has the power and drive selection switches on the back. It includes a 64K cache on board and a "drive busy" light on the front, and conforms completely to the Atari specification, so compatibility is not an issue. The lead is quite short, and may mean problems with a 520 or 1040. Not the fastest drive, but the one to buy if you want quality.

RATINGS

EASE OF INSTALLATION 95%
FEATURES 95%
SPEED 88%
NOISE/HEAT PREVENTION 95%
FORMAT VALUE 90%

**VORTEX 40MByte £599**

Prices start at **£599** for 40MByte version
180MByte largest capacity
Comes with 12 month warranty
Silica Systems ☎ 081 309 1111

Vortex is also from Germany, and as with Protar the emphasis is definitely on quality. The drive can auto-boot and has DMA in and out. A DMA address selector and the power switch are on the back, "drive busy" and power lights on the front. Interestingly, you can write-protect the drive (all partitions or none), and instead of auto-parking at power-off it auto-parks the heads after a pre-set period without disk accesses (15 seconds default). It also powers down the motor after a period of no activity (5 minutes default). The manual is excellent, but installation would be easier if an English rather than a German plug were supplied. The case is smart and robust and the drive is almost silent. We found the auto-parking heads very frustrating in use – the drive took about 20 seconds to respond to the first access. We consequently turned the auto-park off, which then meant we had to manually park the heads. The caching supplied seems very ineffective, and is very awkward to set up. Adequate performance, but very expensive.

RATINGS

EASE OF INSTALLATION 75%
FEATURES 85%
SPEED 90%
NOISE/HEAT PREVENTION 95%
FORMAT VALUE 68%

**ICD FA.ST 50MByte £569**

Comes with 12 month warranty
Silica Systems ☎ 081 309 1111

The ICD FA.ST is the only drive made by ICD, better known for their excellent ICD hard drive interface boards and utilities (supplied with many of the other drives reviewed here), so you'd expect it to be good. Installation is very well explained and would have been excellent had the drive arrived with a plug. The FA.ST has DMA in and out, and also a proper SCSI connector on it, though chaining the drive to another SCSI-fitted drive this way doesn't seem to work (quite possibly because the SCSI terminators need altering – a common problem area). The drive's power switch is on the back, along with a DMA device selector, and there are power and "busy" lights on the front panel. The drive is very fast and very quiet in operation, and the long lead means you can easily place it behind a 520 or 1040 ST. At 80x280x280mm it is smaller than the other large drives, though still not exactly in the compact category. The ICD FA.ST is fast, well-made and definitely worth looking at, but it is expensive.

RATINGS

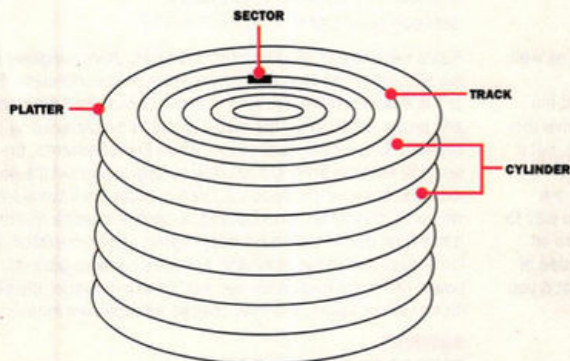
EASE OF INSTALLATION 75%
FEATURES 90%
SPEED 94%
NOISE/HEAT PREVENTION 85%
FORMAT VALUE 75%

MEMORIES ARE MADE OF THIS

HARD AND FLOPPY DRIVES: WHAT'S THE DIFFERENCE?

	Floppy disk	Hard drive
Sector size (bytes)	512	512
Sectors per track	9	17
Cylinders*	80	>500

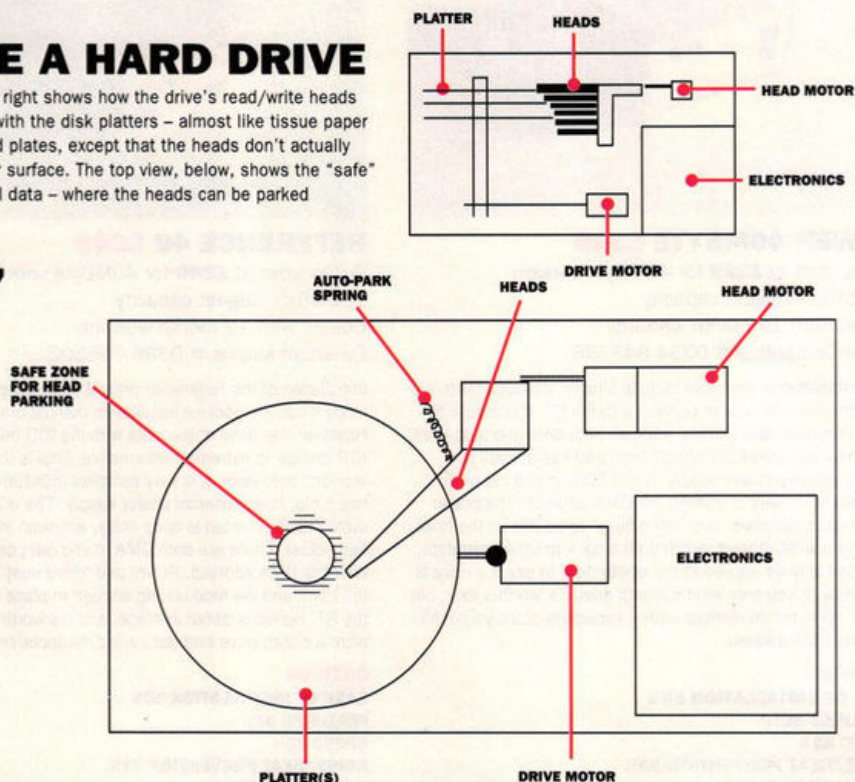
WHAT EXACTLY ARE TRACKS, SECTORS AND CYLINDERS?



Tracks are concentric circles on a platter, sectors are smaller areas of a track and cylinders are a group of tracks in the same position on both sides of all platters. * Note that single-sided floppy disks do not have cylinders

INSIDE A HARD DRIVE

The side view at right shows how the drive's read/write heads are interleaved with the disk platters – almost like tissue paper between stacked plates, except that the heads don't actually touch the platter surface. The top view, below, shows the "safe" zone – free of all data – where the heads can be parked



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**LADBROKE 52MBYTE £429**

Prices start at **£409** for 52MByte without clock
105MByte largest capacity
Comes with 2 year warranty
Ladbroke Computing ☎ 0772 203166

The Ladbroke drive arrived without a plug, and installation is not easy, since there is also no labelling on the DMA ports – but it does have both DMA in and out ports and a selector on the front panel which alters the address, so there is no conflict with any other DMA device. The drive uses the ICD utilities, includes the Turtle backup utility and features auto-parking, auto-booting and a 64K cache on the drive. The power switch is on the front, making life easy but leaving the switch prone to knocks. However, the 70x325x335mm case has protruding sides that go some way to protecting the switch, and the case is tough enough to support a monitor quite happily. The drive has been tested with most emulator boards and is one of the fastest reviewed, even without caching. It is quiet and has a long warranty, so it's well worth looking at.

RATINGS

EASE OF INSTALLATION 65%
FEATURES 92%
SPEED 93%
NOISE/HEAT PREVENTION 93%
FORMAT VALUE 81%

**GASTEINER 85 MBYTE £399**

Prices start at **£269** for 30MByte version
100MByte largest capacity
Comes with 12 month warranty
Gasteiner Technologies ☎ 081 365 1151

The Gasteiner drive arrived without a plug and the DMA ports on the back were loose. This is a large unit, measuring 65x325x330mm. It has DMA in and out ports, but the DMA address cannot be set from outside the case and a warranty label prevents you from opening the case yourself. There are both power and "drive busy" lights on the drive, but they are not marked. The case looks cheap but is very sturdy and can support a monitor. The drive auto-boots and auto-parks. The manual appears to be a very poor translation from a German manual, and is good for nothing but a laugh. A very long lead is supplied, enabling you to place the unit almost anywhere. The drive is very quiet in operation and includes a backup utility. Not bad, but let down by poor manual and presentation. Not too quick either, but plenty of Megabytes per pound.

RATINGS

EASE OF INSTALLATION 70%
FEATURES 80%
SPEED 75%
NOISE/HEAT PREVENTION 90%
FORMAT VALUE 77%

HUNTER 70MBYTE £359

Prices start at **£359** for 70MByte version
210MByte largest capacity
Comes with 12 month warranty
Hunter Business Systems ☎ 0382 581035

Just released for the ST; uses the Rodime mechanism and the ICD interface and utilities. Has both DMA in and out ports, a clock as standard and a 64K cache on the drive; auto-boots and auto-parks. Measures 70x280x280mm. "Drive busy" light on front panel along with power switch. The power lead could come out of the drive if pulled hard enough. Very fast and quiet, but trying to load the C linker produced a two-bombs "bus error" message. The drive also failed to copy or delete data with caching disabled. The drive is apparently incompatible with some software and/or ST hardware combinations – a shame, since it is very fast and cheap. Check before you buy.

RATINGS

EASE OF INSTALLATION 80%
FEATURES 85%
SPEED 91%
NOISE/HEAT PREVENTION 95%
FORMAT VALUE 52%

THIRD COAST ST ADAPTOR KIT FOR PC 32MBYTE HARD DRIVE £230

Third Coast Technologies ☎ 0257 472444

Third Coast supply not just ST drives but also kits to adapt IBM hard drives, should you be unfortunate enough to have one lying around. The kit can only take the half-height IBM drives, not the older full-height type, and arrived complete with everything necessary except for any fitting instructions. This makes it a poor choice for the non-techie, since the cables can easily be put onto the drive upside down. Once sorted out, however, it all works very well indeed – even our slow old drive mechanism did very well in the speed tests. The kit came with the ICD manual, but not the ICD utilities themselves. Not for the average user, this one, but worth it if you are a techie!

RATINGS

EASE OF INSTALLATION 70%
FEATURES 90%
SPEED 89%
NOISE/HEAT PREVENTION 90%
FORMAT VALUE 76%

REMOVEABLE HARD DRIVES – THE BEST OF BOTH WORLDS?

With a removeable hard disk drive, the disk platter is in a plastic case like a floppy disk. The advantages are threefold. First, security: if you work with sensitive information, you can simply take your data disk home or lock it in a safe. Second, a removeable drive makes the transport of large amounts of data easy. For example, Jean Michel Jarre uses STs, so he could send a 40MByte MIDI sample to the UK on one removeable disk rather than 50 floppy disks. The third advantage becomes evident if you need to keep large amounts of data: once you've filled the disk, all you need to do is remove it and pop in a replacement – though a new cartridge is an extra £100. The problem with removeable hard disks, however, is that they are inevitably not as well sealed as the fixed sort, making it that much easier for undesirable things to get into the drive, potentially causing head crashes. Long-term reliability is still not proven.

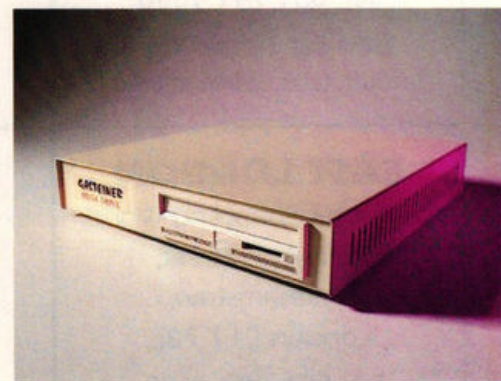
**PROTAR 44R £611**

Comes with 12 month warranty
Protar ☎ 0923 54133

The Protar removeable drive is based on the Syquest mechanism. As mentioned, this has a poor reliability record, but Protar's very stringent quality control procedure should catch any faults. The drive is the same size as the fixed Protar drives reviewed above (65x340x340mm), with a disk speed indicator light and a busy light on the front, and it has all the same features, except for the disk platter, which comes in a plastic case like a floppy disk. Once the disk is placed into the drive, it takes about 30 seconds for the drive to be ready for use. Considering that the platter is not in a vacuum, its speed is very impressive indeed. If the advantages of removeable hard disks appeal to you, then the high quality Protar may be the one for you.

RATINGS

EASE OF INSTALLATION 95%
FEATURES 95%
SPEED 80%
NOISE/HEAT PREVENTION 90%
FORMAT VALUE 79%

**GASTEINER 44R £599**

Comes with 12 month warranty
Gasteiner Technologies – ☎ 081 365 1151

This is another 44MByte removeable drive, using the same Syquest mechanism as the Protar, so once again there is a possible questionmark over the unit's long-term reliability – and with this one you haven't got Protar's reputation behind you. The drive tested came with a plug but no cartridge. The manual is of the same poor quality as the 85MByte Gasteiner drive reviewed on this page – apparently a poor translation from the German. The drive is noisy and slow, but it does auto-boot, and the utilities – once you've thrown away the manual – are actually quite good. The DMA address can be changed on this drive. Not a fast drive, but it does the job, it's flexible and you can remove your valuable data, if that is what's important to you.

RATINGS

EASE OF INSTALLATION 70%
FEATURES 80%
SPEED 70%
NOISE/HEAT PREVENTION 84%
FORMAT VALUE 73%



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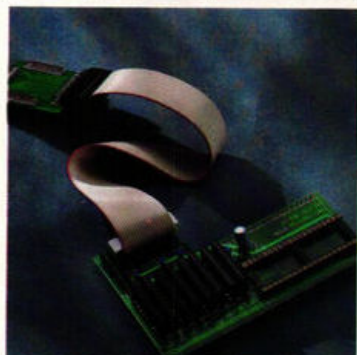
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TIME TRIALS – JUST HOW FAST ARE THE HARD DRIVES?

TEST (Key below)	Atari 30MByte £369	3rd Coast 32MByte £299	3rd Coast DIY kit £230	Power 40 slim £299	Power 40 £329	Reference 40 £349	Supra 40MByte ££399	Protar 40DC £423	Vortex 40MByte £599	ICD FA.ST 50MByte £569	Ladbroke 52MByte £429	Hunter 70MByte £359	Gasteiner 85MByte £399	Protar R44 £611	Gasteiner R44 £599	Floppy Disk 60p?
1	193.81	96.87	99.09	99.33	137.36	139.16	171.73	122.41	127.62	96.77	96.97	98.86	156.68	131.37	187.61	
2 W	—	47.56	70.11	65.96	65.44	67.31	—	76.63	74.61	48.59	54.24	68.55	—	20.77	—	
2 WO	139.53	63.94	91.63	93.72	92.36	93.59	81.76	86.58	75.58	64.53	79.14	failed	88.50	106.18	113.60	
3	1,266	768	799	796	812	792	885	824	805	778	771	776	928	911	1,043	
4 W	—	9.30	9.59	10.19	10.42	9.64	—	9.87	9.99	9.24	9.43	9.29	—	9.92	—	
4 WO	10.88	9.40	10.08	10.91	10.69	10.23	9.60	9.92	10.17	9.55	9.50	10.44	10.04	11.79	10.12	30.14
5 W	—	10.87	11.14	12.46	12.52	11.49	—	12.84	13.26	10.66	10.88	failed	—	13.11	—	
5 WO	15.7	11.74	12.99	13.92	13.74	13.98	12.31	13.11	13.65	12.06	12.03	failed	13.31	17.36	13.20	53.51
6	3.15	2.72	2.84	2.84	2.78	2.78	2.89	2.75	2.67	2.73	2.75	2.83	2.91	2.89	2.91	13.34
7	2.24	1.81	1.94	1.96	1.91	1.98	1.88	1.82	1.79	1.78	1.83	1.92	1.98	1.92	2.18	9.20
8	17.95	12.53	13.86	13.56	13.51	13.37	13.20	12.22	13.52	12.68	13.03	13.33	14.70	14.87	15.71	82.27
9	2.82	2.27	2.56	2.48	2.38	2.40	2.62	2.01	2.44	2.41	2.29	2.52	2.51	2.41	2.61	
10 W	—	9.85	9.02	10.11	8.71	10.13	—	17.60	15.40	9.94	9.78	9.54	—	21.32	—	
10 WO	25.24	15.53	17.35	21.45	21.55	23.37	15.55	18.10	15.82	15.75	16.62	failed	18.95	86.00	23.89	
STF	60%	85%	76%	74%	77%	73%	75%	90%	68%	75%	81%	52%	77%	79%	73%	

THE TESTS PERFORMED

We measured (in seconds) how long each drive took to complete these tests. The lower the figures, the faster the drive

1. Copy a floppy disk (STF Cover Disk 13) to hard drive (720K)

2. Copy a large number of files (5.57MByte) across two partitions – with caching (W) and without
3. Install *Wonderland* on hard drive
4. Compile a C program (7.274K) – with caching (W) and without
5. Link the above C object file – with

caching (W) and without
6. Start *1st Word*
7. Start *Organiser*
8. Start *Wonderland*
9. Start *BASIC*
10. Delete files from test 1 – with caching (W) and without



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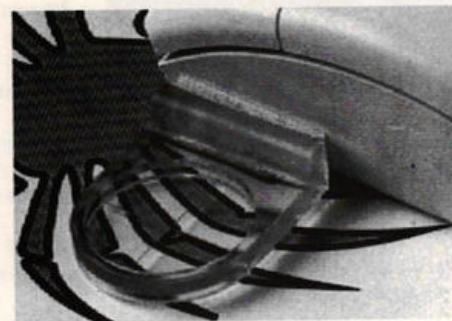
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On the record

The ST wasn't named after Sam Tramiel, but he is the managing director of Atari US – the man in the hot seat. Recently, this jovial Canadian was in Britain, so Andy Hutchinson and Neil Jackson headed down to Atari UK's HQ for an exclusive chat about Atari's plans and projects. Alex Soboslay reports.

Atari are pinning great hopes on their two new portable STs, the Book and the STylus (formerly STyle, originally the ST Pad). Book is an A4-size notepad-type machine, storing data mainly on RAM cards. STylus is a keyboard-less "portable user interface" – you write directly onto an LCD screen and the computer interprets your handwriting and turns it into an ASCII text file. Sam Tramiel revealed that there are plans to begin production of the Book "very very soon," with a first batch of 500 starting this month.

"As for the STylus," he said, "I would conservatively say it will be in production by December." The handwriting-recognition software, he claimed, "is very close to being finished. We're just doing some final touches to it." (ST *FORMAT* brought you exclusive technical details of the new machines in issue 22 – if you missed that, or any of our subsequent reports, turn to page 136 for the *FORMAT* back issue service.)

Is there any other software Atari plan to bundle with STylus, such as a card index or an address book program? "Yes. I can't tell you what it'll be right now, but it'll be all kinds of neat little things for the user, really friendly to use." Current handwriting-recognition systems sell in the US for around \$6,000. Sam aims to make sure the STylus is "very competitively priced in the Notebook area or the handwriting-recognition area" and hopes to bring it out for as little as \$1,000!

Sam is enthusiastic about the controversial technology of handwriting-recognition and insists that TOS, the ST's operating system, is ideal for this application because it is graphics and windows-based. "It's a natural for pen writing," he declared. "If you use MS-DOS, you have to use Windows (the PC equivalent to

the ST's GEM Desktop). If you have to use Windows, you have to use 2MBytes of RAM and you have to have an 80MByte hard disk – and in a portable machine with a hard disk, if you move the machine in any direction fast, the hard disk goes absolutely crazy. So this should be a unique position for us."

One potential problem is how you transfer data from your Book or your STylus onto your ST, so you can make use of it in one of the powerful programs the ST supports. Sam revealed that both the new machines are to come with a small, portable, 3.5-inch floppy drive, which can be either battery or mains

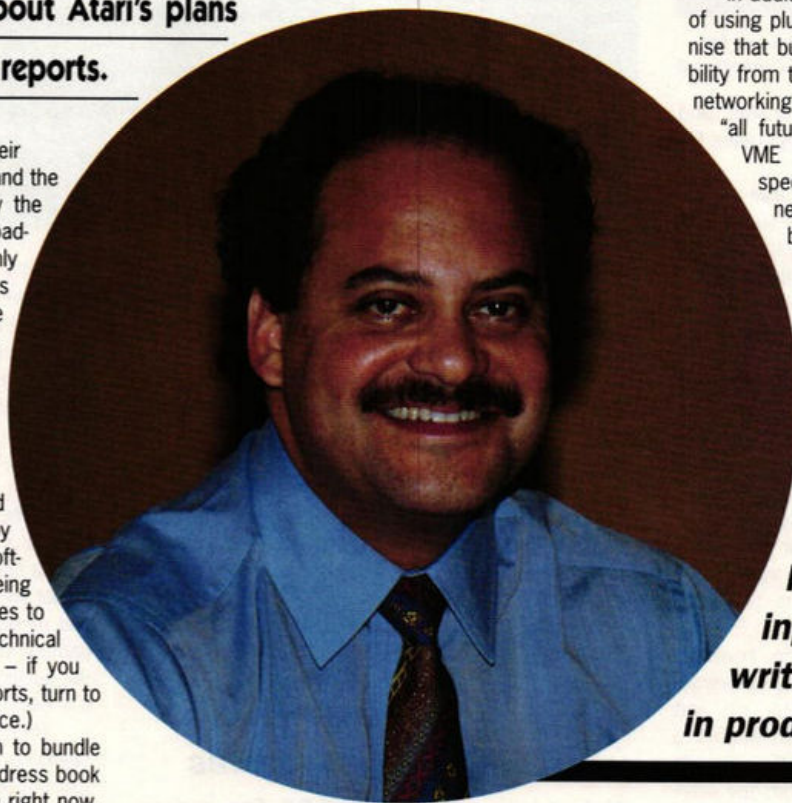
driven. This, he said, is ready for shipment next month. Atari have also developed a program to transfer files from the STylus or Book to an ST, he added. "A very easy transfer program. And STylus will also have standard data cards" like those currently used in Atari's hand-held Portfolio.

In addition, both STylus and Book will be capable of using plug-in networking cards. Atari clearly recognise that business users demand a networking capability from their machines: the Mega STE already has networking facilities built in, and Sam revealed that "all future high-end Atari machines" are to have VME (Virtual Memory Enhancement) slots, specifically intended to support the Ethernet networking system. The software is now being developed, and Sam's goal is to have Ethernet cards built-in.

The Book and STylus also exploit what is widely agreed to be one of the best aspects of the ST, that remarkable mono display. We asked whether Atari's plans involve sticking to the present split resolution/split monitor standard or if they expect to be turning more to multisync monitors. "Without

Atari's STylus, the keyboard-less ST you input text into by just writing on its pad, "will be in production by December"

SAM TRAMIEL



ONE FOR THE "HACKERS?"

Way back in December, *ST FORMAT* brought you world exclusive news of the development of the STT add-on transputer board – an enhancement especially suited for maths-intensive applications. When we asked Sam Tramiel about this piece of hardware, he passed the buck to Bob Gleadow, Atari's UK boss. So: STT, Bob?

"It's a simple extension for the

'hacker' market, as it's frequently referred to," Bob said. "STT is a development name for a project which we're working on. If it's finalised it won't be limited to just transputers. All the preliminary work has been completed, but in any R&D department there are projects which get started but aren't finished."

So are you saying that this one

won't see the light of day?

"Nope, I'm not saying anything. A lot of the early Atari market was based on these 'hackers.' If you remember the furore that surrounded the DMA problem with hard drives, you'd think that 7 million people were upgrading to hard drives. So there must be a 'hackers' market out there somewhere."

telling you too much about the new machines," Sam replied, "there'll be many different resolutions, all compatible with the present machines and software. The advantage of having the monochrome display we have today is that it allows for ST Books and for STylus, which some other companies won't have the ability to do. So we're very glad to have that. We will not abandon that. There will be higher resolutions in both monochrome and colour, and multisync monitors could take a position in that."

When pressed about other new machines, Sam hinted at the possibility of a "fourth ST" (as industry sources are calling it), perhaps as soon as 1992. He confirmed that there will certainly be an enhanced TT with multi-tasking capability – that is, the ability to run more than one program at the same time. "It's very far along in the development process," he said. "The whole issue is to make sure it will be as compatible as possible with existing packages which were not written to be multi-tasking packages. It will be at the same price point as a standard TT – it will just be an upgrade to a TT, or any future machines using 68030s or 68040s. It will definitely be available by March."

Another upgrade on the way is the so-called Ajax chip, which will enable Mega STEs and TTs to handle 2MByte floppy disks. Sam said that Atari will be ship-



● In this building in Slough, they've found a use for those Atari power-packs. They use them as doorstops!

ping TTs fitted with 2MByte drives this month, and later making available "very inexpensive upgrades for the TT and for the Mega STE."

Sam was reluctant to give anything away about the Falcon project – Atari's secret new super-computer built around CD-based data storage technology. (ST *FORMAT* brought you the world exclusive details in issue 25.) He did however reveal that the Falcon "uses a Motorola processor and it's 32-bit. It's a 68030/68040 and it'll be very exciting."

He wouldn't say any more than that – but this is the first suggestion anywhere that the new machine uses the Motorola 68040 central processing chip. This is an extremely rapid chip which can be run at speeds up to 32MHz – that is, as much as four times the speed of existing STs. It's at the cutting edge of technology and so far there are no other computers which use it. If Falcon does indeed use this CPU, it will offer you unprecedented processing power at your fingertips.

You won't have to wait for the Falcon, however, to benefit from the new CD-I (Compact Disc-Interactive) technology. Sam announced that Atari will next month be releasing a SCSI-based CD-ROM – that is, a CD-based ROM built into your ST or STE. This will include a special adaptor to convert from the standard SCSI protocol to the ACSI on which CD-ROM

Many of us aren't thinking about new Atari machines yet – people who bought an STE, for instance, which was supposed to be on the cutting edge of technology but (as *FORMAT* revealed) suffered from a DMA chip fault that made some STEs incompatible with some hard drives. We asked Sam Tramiel whether the problem had finally been laid to rest.

"Yes. The problem is clearly out of the way now. We made a new chip, called the 4140 DMA chip, added more grounds to it and made it much more secure. So the problem is definitely gone. It was a grounding fault in the original DMA chip."

The absence of technical data at the time about the DMA chip problem exposed how hard Atari seemed to be making life for developers – or anyone who wanted to know about the inter-

nal system of the machines. We asked whether Atari were addressing this issue, and Atari UK Managing Director Bob Gleadow replied: "In the US they came out with a scheme to sell the developer documentation without the hardware – without the disks etc – as a software package. We will be embracing that in about 60 days' time."

Sam Tramiel added: "We're also writing, in our Dallas R&D labs, special technical reference guides on new hardware. So we'll be publishing books now on the new machines."

● What about enhancements to the existing machines? Certainly one of the criticisms of the ST and even the STE is the dreadful soundchip. Is this problem being addressed?

"The STE has two soundchips," Sam replied. "We had to leave the AY

chip in the STE for compatibility. The major areas we're looking at for our future machines are graphics and sound. You'll see some great graphics and sound on our 68000 TOS family machines."

● One of the things that impressed people straight away about the STE was the analog joystick capability, yet we've really seen very little hardware developed to make use of that. Are there any plans to use those kind of redundant sockets on the side of the STE?

Sam: "I won't give you any dates, but we are working on a very special joystick, for that port. It'll be an add-on."

ST *FORMAT*: When you say "special" what does that mean?

Sam: "It'll have more than two buttons on it."

devices are currently based. This should open up the possibility of truly huge games, for example, being released on a single CD-like disc where now they might take up four floppies.

Atari don't intend to follow Commodore down the "CD-TV" path – producing stand-alone devices. "It'll be a peripheral," Sam insists. "We might in the future have a slot where you can plug a peripheral into your main housing. Instead of buying an add-on box, you just take a small CD-ROM player of some size and just plug it in the front of your housing just like you would with a floppy or hard disk drive. Our new housings will have the ability to do that."

"We are looking at how to integrate CD-I," Sam added. "There's also a new format from Sony, a small

game. I'm not sure how much they'll cost. I'll know more after this week when I visit Philips."

However, all these new developments don't mean that Atari have forgotten the present strengths of the ST. We mentioned the ST's dominance of the MIDI music market on both sides of the Atlantic, and Sam confirmed the company's continuing commitment to the field – in their new machines as well.

"MIDI is a very important market sector for us," he affirmed. "We get a lot of pleasure out of it, from being involved in the music world. On the ST Book we have a little module which will plug into it. I forget the actual specs, but it'll have more MIDI ins and outs on that module. It'll also have a thing called SMPTE. We had our MIDI expert James Crumphy working on it with the outside world and he said, 'This is what we need.' It is being tooled now."

This is an inspired move. The STACY portable ST seemed to be just what musicians had been waiting for, but disastrously short battery life scuttled that ill-fated machine. A MIDI module for the Book may cement the ST's position as the machine of choice for the serious musician. However, industry rumours about the likelihood of a MIDI multi-tasking environment for the ST seem to have come to nothing. "Not from Atari," Sam said. "The MIDI world is doing all kinds of things, but nothing we're supporting ourselves. It became a very controversial thing, who to support and who not to support."

One thing seems certain: with Sam Tramiel at the helm, Atari is not likely to rest quietly on its laurels. Progress is his watchword, and that can only be good for all ST owners. **stf**

Atari's plans include TTs with 2MByte floppy drives this month, CD-ROM for your ST or STE next month and a multi-tasking TT by March

SAM TRAMIEL

3.5-inch CD – a brand new format. We're talking with Sony, we're talking with Philips and we're definitely going to be involved in CD technology for a long time."

But what about software? Will there be any Atari CD software in the future?

"Yes, although it'll mainly be third party software. We'll be doing a lot of development on the CD games side, but not on the applications side. I've seen a lot of CD-I software and I've seen a lot of CD-TV and still, from a game-playing point of view, I haven't seen exciting games. I see great educational applications, I see great database applications, but not really fun interactive games yet."

Sam couldn't say how much we might expect to pay for titles in the CD-I range, when they finally hit the streets. "It really depends on what you're buying," he said – whether you're buying an encyclopaedia or a



● "Yes, I read ST *FORMAT* every month," said Sam... er, more or less

THINGS TO COME?

Sam Tramiel wasn't in town just to chat to *FORMAT*. He was here talking to software developers about the impressive new machines Atari have been brewing up in their Sunnyvale labs.

Just for the record, the names we saw in the sign-in book at Atari UK's head office (apologies to Atari MD Bob Gleadow – but hey, we're nosy journalists) were: Prospero, HiSoft, Oxford, Working Title, GST, AVR, Amor and Electronic Arts. Can you guess what these developers have in common? There may just be a clue there about the next Atari machine!



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SCREENPLAY

There are, alas, many ways to get lost on the road of Life. Temptation lurks on every corner, sin beckons every second of the day, and Guildford is a particularly dodgy area. But never mind – by the time you've finished reading *FORMAT's* Screenplay pages, all that will seem like Heaven.

SCRUTINISED THIS MONTH

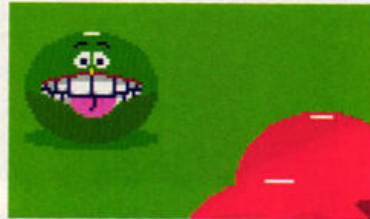
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THE ST FORMAT REVIEW POLICY

- It is *ST FORMAT* policy to review only finished games – that is, the games you could actually buy in the shops – never incomplete or demo versions
- We review *all* games released, but only when they're finished. We will not be rushed into reviewing unfinished games to beat our "competitors"

FLIGHT OF THE INTRUDER

You haven't seen the film! You didn't catch the video! The book you meant to get round to at some point but never actually found the time to get started! But now – you can read the review of Microsoft's new flight sim. Wonder if it will take off?page 68



JIMMY WHITE'S WHIRLWIND SNOOKER

Snooker loopy nuts are we. Er, well, actually we're not (it doesn't make much sense on a black and white telly), but we did get rather excited about Virgin's new simulation of that game with the red, white and green balls – and we're not talking marbles herepage 72

MICROPROSE GOLF

You'd have to go a fair way to beat this golf sim. It's likely to drive the competition green with envy. You'll have no time for sandwedges when you're playing this. Wood you like me to go on, or can you not putt up with any more? (Sad, isn't it?)page 78



MAGIC POCKETS

Between posing for publicity shots, writing press releases, thinking up silly company names and trying to become the best-known designers since Michelangelo gave it up, the Bitmap Brothers produce the odd game or two. And this is one of thempage 82

MEGA LO MANIA

Suffering from Klep To Mania, Soci O Pathy, Par A Noia, New Ro Sis, Triskaiddeka Phobia or even Phobo Phobia? Why stop there? Try *Mega Lo Mania* and transform yourself into a game god! Then all you'll need is a spelling lesson or twopage 76



MILLENNIUM TOP TEN

Millennium are awkward so-and-sos, aren't they? Having a name that no-one can spell properly. Two L's, two N's, no P's. It's quite simple really, innit? Anyway, they pick their top ten just for us this very issuepage 109



COMPLETE GUIDE THROUGH WONDERLAND ● HOW TO SOLVE KING'S QUEST 4 ● HOW TO SURVIVE LIFE & DEATH ● PAGE 95



FLIGHT OF THE INTRUDER



War! What is it good for? Endless cash-ins and cultivating a blasé attitude to death and destruction? Neil Jackson ignores Rules of Engagement and asks who wants to die.

Created by the same team which brought you *Falcon*, Rowan Software, *Flight of the Intruder* is based on the book of the same name by Stephen Coonts, a former Intruder pilot. Just as in *Falcon*, you first enter your name in the duty roster before moving on to choose your mission. You can leap straight in by selecting the Scramble option which takes you directly to the pilot's seat of an F-4 Phantom waiting on the deck of a carrier. Alternatively, you can take a few more precautions and head for the briefing rooms. There are two: one for Phantom missions and one for A6 Intruder missions. Beginners are advised to opt for the Intruder briefing, since that plane is a lot easier to fly than its superfast, afterburning counterpart.

Whatever plane you select, the briefing rooms are the same. There you find the operations, sub-divided into missions for each plane type. Most planes fly in pairs, with you controlling one and the ST controlling your wingman. You can take whichever mission most appeals to you. Some are easier than others, even on the same operation. For example, on a bombing operation, two phantoms handle the MigCAP (Mig Combat Air Patrol), circling around over the sea waiting to engage any enemy aircraft. Another two phantoms fly the Wild Weasel – a dangerous Surface-to-Air (SAM) suppression mission. Here the phantoms encourage the enemy to fire SAMs at them, rather than at the bombers. The Intruders are responsible for bombing the targets. One target is engaged by each pair of Intruders and there are often more than two targets. Consequently the air becomes pretty

F4 PHANTOM vs A6 INTRUDER

These two planes were the mainstay of the war in North Vietnam. Each had its own job to do, but supported the other at the same time. The Grumman A6 Intruder was a fat, tough old bird which could dangle tons of trouble from its oversize underbelly. The McDonnell F-4 Phantom was a sleek racehorse of the sky, capable of supersonic speed. While it lacked a machine-gun (making dogfights a nightmare!), it bristled with anti-aircraft missiles and could out-turn a SAM without a second thought

HEAD-TO-HEAD

	Phantom	Intruder
Max Speed mph:	1,500	644
Max Ceiling ft:	55,000	42,400
Full Weight lb:	58,000	60,400
Max Ordnance lb:	16,000	18,000



● Intruder ordnance, lieutenant? You got it. Walleye TV-guided missiles, 500lb Slicks, even a few tons of old ST FORMAT back issues to drop on 'em!



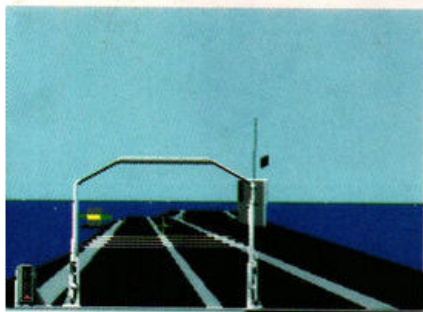
● Going on holiday, sir? You need a Phantom, Shrike anti-radar missiles, a couple of Sidewinders, some sun-tan lotion – and don't forget your flip-flops!



● The A6 Intruder was a two seat, side-by-side affair, capable of carrying vast numbers of bombs. Its ability to dog-fight was limited, but it still held its own in Vietnam.



● The F-4 Phantom was a supersonic jet fighter with bombs and missiles aplenty.



● Landing on the carrier is a bit like crash-landing onto a matchbox. Use the ACLS, fly the meatball (the yellow and green lights to the right) and aim to catch the third arrestor wire. If you mess up, you're a bolter – just boot the throttles and go round again.

thick with friendlies and it's up to you to hit the right planes in a fire-fight.

There is a wealth of other things to check and re-check before you even get near to a plane. You need to know the exact location of the target, what the enemy activity is like in that area and which type of bomb or gun is the best in the circumstances. These details are accessed using an icon display with keyboard shortcuts. Each icon brings up a separate sub-screen showing the topic in detail. Large maps show the waypoints and enable you to get Intelligence reports on specific areas. Close-ups of the planes show all the various bomb-types and give you information on their capabilities. You may even need to check a photograph of the target, just so you can be sure of hitting the right building when you do your dirty work.

After you're finished in the briefing room, you hit another icon to go to the carrier deck. You appear behind the controls of your chosen plane, facing out to sea at the end of the catapult. Five seconds later you're jettisoned into the air and your work starts in earnest. Landing gear up, wait for the speed to rise before climbing too hard, retract the flaps and then pull back the nose to soar into the sky.

Then comes the long haul to the target with only the noise of the engines and the chatter of the radio for company. Messages are constantly relayed to you from other aircraft on the operation, the carrier and the Early Warning planes. Their comments appear in the top left of the screen, colour-coded so you know what's from who. A sampled voice is triggered every time a message comes in, but all it says is "graa-gu-flump-graa-blah-click," which can be a bit annoying. Luckily you can turn it off, as you can the engine's drone.

There is an abundance of options within FOTI. You can fly at five ranks, each one causing more and deadlier enemies to come searching for you than the last. You can enjoy the effects of negative G red-out and blackout, or employ a super-engine which is unaffected by atmospheric effects. Even the infamous Rules of Engagement can be

IT'S MY ENGAGEMENT PARTY

The term most feared in the Navy during Vietnam was RoE or Rules of Engagement – the rules governing which targets American Navy jets could bomb. Only the President could officially add targets to the list, and even the type of bomb to be used was decided in advance by the politicians in Washington. Worse than this, some obviously dangerous targets like SAM sites were not allowed to be bombed because of the risk of killing Soviet advisors who may have been there. Consequently the Rules of Engagement were the bane of pilots' lives. Transgressing them meant an instant court-martial.

● No, look. I've told you before. You can't bomb my coffee cup if I can't bomb yours. You're going to have to start by strafing that small deserted patch of sea, and then we'll meet up, refuel, and I'll drop the ice-cream cone down the front of Ho Chi Minh's pants. Okay?



temporarily forgotten. Weather too can be controlled to a degree, as can the rate of fuel and ammo use. There's even an option to record your flight with an on-board camera and watch it later (assuming you land).

VERDICT: FOTI is a massive game, with massive potential. It won't appeal to everyone, since it's fairly technical. The manual is 215 pages long and it explains everything you need to know, but it's no light read. There are oodles of key commands to memorise and some highly complex bombing procedures to work in mid-flight. Not a game for ditherers!

Graphically, FOTI rivals F-19 Stealth Fighter and Falcon. There are some neat effects, especially when you down an enemy aircraft. However, there are occasional glitches where the 3D gets momentarily confused. These, thankfully, are few and far between and don't detract from the excellent gameplay.

You'd be forgiven if you thought that all flight-sims are the same – most of them are. FOTI is sufficiently different and has enough new elements to make it an exciting, pulse-heightening experience. With a bit of practice, you'll get a great deal from it and enjoy yourself immensely. You may, however, need to take a spare pair of trousers for the first few carrier landings.

NEIL JACKSON

FLIGHT OF THE INTRUDER

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- First 15,000 limited edition with novel by Stephen Coonts
- Many new features which improve on Falcon
- Great sound and fast graphics
- Lots of variation in gameplay and realism
- Tough at first, but worth staying with

STF RATING 92 %

● This is Devil Five Zero Five. Could you have a quick check on the carrier deck? I think I left most of my innards there when we catapulted. Five Oh Five out

SPEED	188 KNOTS	HEADING	90 DEG	ALTITUDE	362 FT
VIEW	OUTSIDE	CALLSIGN	BLACK EAGLE 1	AUTOPILOT	OFF
WAYPOINT 2	WUIGATE	RANGE	37 MILES	BEARING	204 DEG

JARGON BUSTERS

Your guide to the gung-ho gobbledegook

AAA or triple A	Anti-aircraft artillery	GSD	Phantom's rear seat
ACLS	Automatic carrier landing system	Glide Slope Deviation	The horizontal scale on the ACLS indicator
AOA Indexer	Angle of attack indicator, showing the tilt of the plane as it comes in to land	LGB	Laser Guided Bomb, like a Paveway
ASI	Air speed indicator	Nuggets	Airmen on their first tour of duty
BARCAP	Barrier air combat patrol. Fighters which defend a carrier against enemy aircraft	SAM	Surface to Air Missile. Your worst nightmare
Bingo Fuel	Just enough to get home!	SAR	Search and Rescue. Your best friend
Bogey	Unidentified aircraft. May be friend or foe	Sierra Hotel	More military phonetics. Short for Sh*t Hot!
CAG	Commander Air Group. The man who plans the missions	Trap	Arrested landing, using the hook and wires
CO	Commanding Officer. The guy you listen to!	VVI or VSI	Vertical Velocity (Speed) Indicator. Shows the rate at which you are climbing or diving
COMED	Combined Map/Electronic Display	Zoo	Prisoner of War camp near Hanoi. You don't want to go there!
CV and CVA	Aircraft Carrier and Aircraft Carrier (Attack)		
DIANE	Digital Integrated Attack Navigation Equipment		
DMZ	Demilitarized Zone. The border between North and South Vietnam		
Double Ugly	Pilot's term of endearment for the F-4 Phantom		
EW	Early Warning		
Feet wet/feet dry	Pilot's term for flying over sea or land		
FFAR	Folding Fin Aircraft Rockets		
FOD	Foreign Object Damage, such as a bird in the engine intake		
G	Measurement of acceleration force. 1G is normal		
GIB	Guy In Back. Navigator in an F-4		

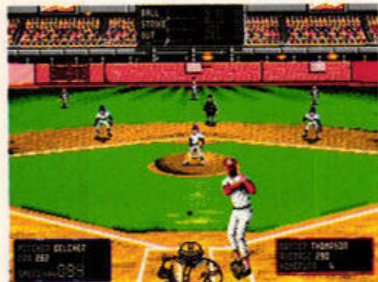


● Here is the news. Today, President Johnson announced that in-flight Naval terminology is not of an acceptably clear and understandable nature. It's fallen to ST FORMAT to explain it all...

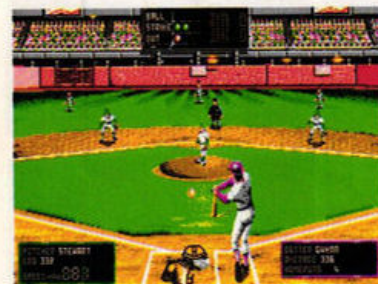
RBI 2

It's a good, wholesome sport, is baseball. Fast, sporting, fun and as American as Mom's home-made apple pie. But because the English actually invented it (and called it rounders), it's come back to haunt us in the shape of RBI2.

RBI stands for Runs Batted In (the 2 doesn't stand for anything), and what it's all about is getting as many of your men around the diamond-shaped pitch as you can manage, then getting the



● That pitcher must really have it in for you, chucking a hard ball at 94 mph straight towards your head...



● Halfway into your swing you decide you didn't want to play the stroke. But it's too late, so get your running trousers on and prepare to dash for first.

opponent's team out as he tries to do the same to you.

Luckily there's very little management-sim nonsense. Pick your team from the biggest in the USA, select the best pitchers and batters and you're away. Well, you'd better read the manual first to learn the rules, but once you're *au fait* you can get stuck in. Batting simply requires you to move your bloke left, right up and down, then hit "Fire" when the ball comes whizzing towards him. He then runs automatically to the first base.

Pitching is more complex. You can select the speed and curve of the ball, with the idea being to make the batter miss (what's known, strangely, as a strike). Three strikes and he's out. If he hits, though, your control switches to the outfielders who try and catch the ball, then throw it to any base with a batter dashing madly towards it. If it gets there, he's out too.

Like rounders, it's all incredibly exciting, and the graphics are great too. There's a pitching/batting view (from behind the batter) and there's a view of the diamond, which scrolls in any direction to follow the ball into the outfield. It's clear, fast and enjoyable to look at. Scoreboard graphics are an extra bonus, adding a marvellous stadium atmosphere. This is enhanced by the sound effects. They're slightly comic hitting, running and falling over noises, with crowd cheers whenever anything cheer-worthy occurs.

VERDICT: Only one thing lets RBI2 down slightly: there isn't quite enough

● The batter belts towards first just as the ball whizzes towards the fielder there. It's pucker time!



● In this unique baseball game, make sure you watch the ball shadow. You've skied the ball, but it's a foul – it's nipped behind the diamond, as the shadow shows.

player participation in the game. When you're batting all you can do is waggle a bit on the spot, then hit "Fire" at the right time – it's down to luck where the ball goes. Everything else is done for you. Pitching and fielding is more interactive (and more fun) but the batting is too simple. Overall, though, RBI2 is excellent fun if you like baseball, and highly exciting in the two-player mode where you can see your opponent grimace with every lucky shot. And with a free cap in every box, it makes you glad us Brits invented the game.

JAMES LEACH

RBI 2

DOMARK £24.99

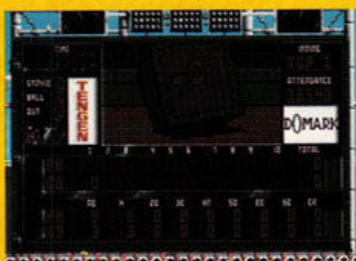
- The only baseball game on the market at the moment, so it's certainly original.
- The effective, graphically pleasing twin view system is unique among sports sims. The scoreboard is far more entertaining than the one used in Kick Off.
- Not as interactive as other sports games such as Kick Off 2 – and therefore not quite as exciting.

STF RATING 76 %

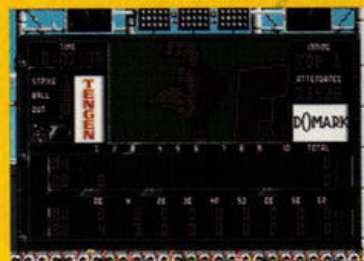
WHAT'S GOING ON HERE THEN?

The electronic scoreboard appears briefly after every pitch, giving you all the facts you need to know – and many you aren't too fussed about. It also has a large video display with bright stylised cartoon graphics, telling the crowd exactly what's happening – essential since most of them are too far away to see.

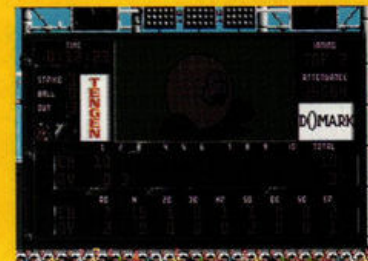
1 Home run. A batter has thwacked the ball right out of the park. He (and any other players on any of the bases) can jog round to fourth without fear of getting out. Oh, and the crowd goes absolutely wild too.



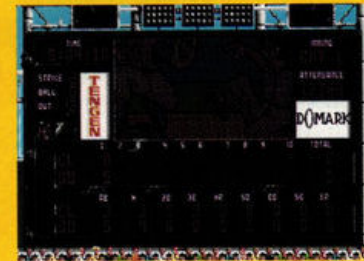
2 Safe. This terrible pun occurs whenever a batter gets to a base before the fielder can stump him out. He then proceeds to wait there until the next batter hits.



3 Foul ball. An even worse pun. If the ball is hit behind imaginary lines stretching from the batting position to the first and fourth bases he can't run – nor can anyone on the bases.



4 All out. When three batters have been given out, the whole team is out, no matter who's left standing on the bases. It's a tough game, son, but someone's got to play it.



5 Other incidents (like someone sliding onto a base micro-seconds before the ball gets there) have their own graphics. When you get bored, hit "Fire" to go back to the action.

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EGA, Tandy 16 Col)
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Rolling Ronny



WHIRLWIND SNOOKER



Snookey! Thrbb! Arenchasicokifit? There's more snooker on the telly than there are adverts, plus the snooker-celebrity quiz shows to boot. Where will it all end? Here, possibly. This game, as Hurricane Higgins might say, is not to be sneezed at. Jimmy White's Whirlwind Snooker is the work of programmer Archer MacLean, previously known for his kung-fu masterpiece *IK+*.

Facing stiff competition from Firebird's *3D Pool*, you'd think there was nothing new you could add to a snooker game. You'd be wrong. *JW's Whirlwind Snooker* has its pockets stuffed with neat tricks which set it rest and spider above the competition.

In the one-player game, you select one of four computer-controlled players. They have different abilities, so you can pick a level of skill to suit your own. However, even Tom (the wimpiest player) is a real crack shot who spends all of two seconds planning, lining up and then potting you into oblivion. It's marvellous to watch, but demoralising when you get thrashed. Pick a two-human-player game if you're a beginner. At least you know both players are equally crappy.

Before you can break, you must position the cue ball. This is done by dragging it with the mouse pointer, anywhere within the D. You can then add topspin for that extra roll-on, or a bit of side to curl the ball like a pro. You do this with the icons at the top or side of the screen. A small black cross shows the impact point of the cue on the ball, and it's a lot easier to read than a real cue ball.

When you're happy with positioning, the angle of your cue and the the top/stun/side or spin, it's time to chalk

your cue tip and whack the sucker. Various strengths of shot can be applied, with stunningly realistic results. As ball strikes ball, you notice the fluid movement which makes *JW's Whirlwind Snooker* so cool. You'd think you were looking at a real table, with real balls. Nothing jerks, nothing slows down or moves erratically. Balls cannon around, gradually tailing off as they run out of steam. Spectacular!

VERDICT: Strangely, it's not just the smoothness and realism which makes it a "must have" game. Nor is it the Jimmy White licence (it could be Fatima Whitbread's Snooker - I'd still want it!). It's what happens when you leave it alone. If you take too long deciding a shot, then one of several things happens. Flies descend onto the table and flit about on your balls (ooer!), or the balls start pulling ugly faces at you, or waving placards. No, really!

JW's Whirlwind Snooker is enhanced by some excellent sound effects, too. Crowds clap and cheer when you pot a ball, the cue sounds perfect and the crack of ball against ball is, well, overwhelming. You can smell the beer and fags and the musty scent of the Hexagon (almost). Even when you miscue, the "twank" of your cue announces the fact to all and sundry, just like for real. It's embarrassing, really.

So, if you're bored with snooker, you're either watching too much non-interactive telly, or you're not playing this. It's more enthralling than a Steve Davis 147 break, weirder than Dennis Taylor's glasses and funnier than Ray Reardon's haircut. Get it now, but beware, you might have to "cue" for ages (groan...)

NEIL JACKSON



● Do the double! Using the computer player's abilities, you can find out the correct angle and power you need to pull off a master stroke time and time again.



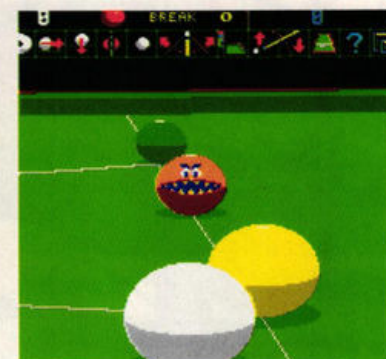
● Buried deep within Jimmy White's Whirlwind Snooker, there's a help screen which tells you exactly what does what. Manuals? Ha! They're a thing of the past.

RAINBOW-COLOURED SPOTS BEFORE YOUR EYES

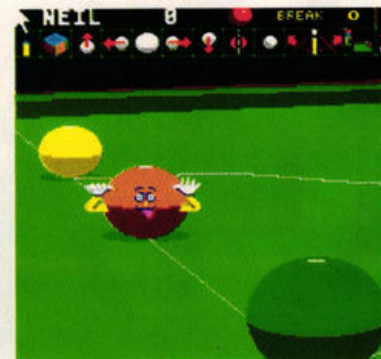
No, you haven't been overdoing it with the Snooker Party animals and you haven't gone overboard with the magic mushrooms either. The balls in Jimmy White's Whirlwind Snooker have a lively personality all of their own. If you should take too long deciding on your shot, you're treated to a right royal ribbing by the nearest balls on the table, who take enormous pleasure in putting you off your next shot. Never mind though, you've got the remedy for their jibes. A good hard whack on the head with a five-foot length of stick should shut them up before they make too much fuss!



● It's been a very long, hard evening here at the Crucible Theatre tonight. The players are tired and emotional, and... Oh goodness! What on earth's going on here then?



● Now stop that before you blimmin' start. I've been pretty close to Yellow for a year now, and I'm not about to let you come along and knock her around.



● And you needn't think you can sneak up behind me and knock me sideways, either. I wasn't born yesterday. Yar boo, and sucks to you!

GIVE US A BREAK, JIM

The Trick Shot editor in Jimmy White's Whirlwind Snooker is a complete sub-game for you to experiment with. Just like an "off night" in the Crucible, you can sneak back to the table and set up shots that would give Newtonian physicists a headache.

Balls can be dragged around the table to any position you choose, and the computer player can be called upon to do the aiming for you. All you need to do is call your mum in as you nonchalantly plug the cue ball. Sneaky or what?



● Reckon you could pot black without touching the reds? Ludicrous shots like this are easy to set up with the Trick Shot Editor.



● Aiming and examining the balls is usually where most snooker games fall down. Not this one. Everything can be scrolled around in all directions by mouse. You can zoom in and out, and reposition at the touch of a button.



● Gentlemen, it's time to place your balls. Breaking means you need to get properly set up before cueing, so you can drag the cue ball around for your favourite opening shot.

JIMMY WHITE'S WHIRLWIND SNOOKER

VIRGIN £24.99

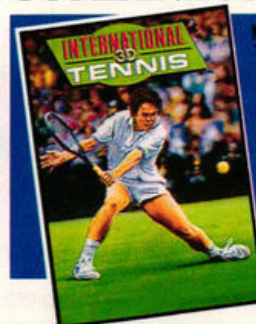
- Smoother ball motion than both 3D Pool and Billiards 2 Simulator
- High giggle-factor, previously unseen in snooker games
- Tough computer players make for exciting and challenging gameplay
- Trick Shot Editor and Save options make for better value for money

STF RATING 94 %

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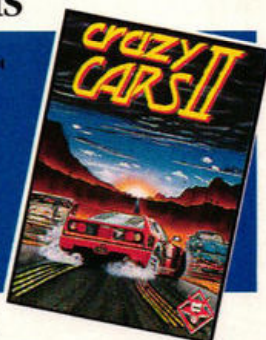


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TITUS
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DRIVING

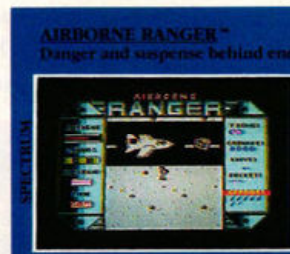


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Italy 1990 Winners Edition Programme.

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Screen shots are only intended to be illustrative of the gameplay and not the screen graphics which vary considerably between different formats in quality and appearance and are subject to the computers specification.

www.stformat.com

What will you cha

FORMULA ONE GRAND PRIX

Have you ever wondered what it would be like to be one of those 26 drivers, revving on the grid, waiting for the Green light to start you off on a mayhem of crashing

gears, smoke, roaring engines and burning rubber as the Grand Prix season races off into another year? Well, now you can strap on your seat belt! MicroProse and Geoff Crammond, the author of 'Revs' and 'Stunt Car Racer', have teamed up to engineer the only complete Formula One Grand Prix simulation.

MicroProse Grand Prix is crammed full of features: 16 undulating 3D circuits from the street tracks of Phoenix and Adelaide to the glamorous Monaco harbourside and the choice of 26 independently controlled cars out of the current teams; from Jordan and Brabham to Williams and Ferrari.

Study the circuit in practice, adjust your car to achieve peak performance, then roar away for your fastest qualifying lap time to put you ahead of your rivals on the starting grid. Overtake the other cars by slipstreaming or outbraking them into corners, then watch them in your wing mirrors as they try to catch you. Be careful, you might have to avoid a shunt that's just happened around the next bend. It's tough, it's challenging, it's exciting, it's the most realistic Grand Prix simulation ever.

- Authentic cockpit controls with radio and adjustable wing mirrors.
- Realistic tyre and brake wear; judge when to make that vital pit stop.
- View the racing action from television cameras located all over every track and replay your greatest triumphs and worst disasters.
- Unpredictable weather patterns; the race may start dry but a sudden cloud burst may force you to change your tyres and style of driving.
- Four levels of difficulty, from novice to potential Champion, make this a challenge to all drivers.



- From the back of the starting grid to World Champion, MicroProse Formula One Grand Prix, it's all there bar the shouting!

Formula One Grand Prix will be thundering into all good software stores soon for your Commodore Amiga, Atari ST and IBM PC & Compatibles.

MicroProse Simulation Software is available at all good software stores. If you experience difficulty in obtaining any of the MicroProse titles they can be ordered directly from us at MicroProse, Unit 1, Hampton Road Industrial Estate, Tetbury, Glos. GL8 8LD. Tel: 0666 504326



MicroProse Simulation software - Y

COMMODORE AMIGA AND ATARI ST SCREEN SHOTS SHOWN. ACTUAL SHOTS MAY VARY BY FORMAT.

nge into tonight?



MICROPROSE GOLF

Computer owners who like golf have been fortunate to have a wide range of games to choose from. Now, with MicroProse Golf, they've also got the definitive simulation. If you've been playing around, stop; and start playing a proper round.

MicroProse Golf accurately recreates the fairways and greens of each hole using stunning 3-dimensional technology which allows you to travel anywhere around the course. You can even follow the ball as it flies through the air and watch from numerous selectable TV viewing positions.

Accurately modelled club and ball dynamics take account of club selection, ball and foot position and swing, with varying course conditions adding to the huge range of effects that you can witness at first hand. MicroProse Golf is so true to life that it will actually improve your own golf game!

- Realistic 3-D landscape allows you free movement around the whole course.
- Animated "Televisual" presentation and camera positions, including a unique follow-the-ball option.
- Six challenging courses, each in a different style, including 'links', 'woodland' and 'water' courses.
- Options to change stance, swing, tee and ball positions and see their effects on your shots before, during and after each stroke.
- Varying ground and atmospheric conditions.
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MEGA LO MANIA



Is it a god-game? Is it a strategy sim?
Is it a *Populous* clone? Ed Ricketts,
resident iconoclast, asks in a holier-
than-thou way, "What on earth does
***Mega Lo Mania* think it is?"**



● Strange spellings and even stranger speech abound in *Mega Lo Mania*. More little people, more overhead views, but don't be fooled – a god-game it may be, with warring tribes aplenty, but *Populous* it isn't. Just what is it then?

EVOLUTION FOR THE IMPATIENT

As you progress through the tech levels, not only do your weapons become more sophisticated but your men and towers change to reflect the technological advances too.



● Your people start as cavemen wearing furs, but soon reach the Roman Age and adopt rather fetching togas. Bottom right is a 1980's businessman and a man in storage, ready for the Mother of Battles.



● It's the same story for your weapons. Rocks and catapults are about all you can manage early on, followed by biplanes, fighter planes, flying saucers and finally nukes. The first ten are defensive weapons.



● The towers appear as various types of castles to begin with, but change to industrial buildings in the 1920s and detached houses in the '80s, ending up as weird futuristic domes in 2001. These three main towers are from 900, 1400 and 1850 respectively

Populous. There, the word's been said. It's obligatory to mention *Populous* in connection with any game that has a 3D isometric view and little people running about in it, even if the game in question is as different from *Populous* as chalk is from a certain comestible. *Mega Lo Mania* has those things but that's where the similarity ends.

The aim is to conquer a number of islands and become the Ultimate Ruler of Everything. These islands are spread over ten epochs, ranging from caveman level to the far future. You begin each epoch with 100 people under your command, and play against up to three other demigods.

Each epoch has three or four islands, and each island is split into a number of sectors. Initially you have control over one of these sectors, and your goal is to win control of as many of the sectors as possible, to eventually wipe out all the other players' men and win the island.

Naturally you need weapons, but before you can build them they have to be researched. At the beginning of the

provide supplies of these elements – and of course mines are only available at higher tech levels. As the tech level increases still further, you can build factories and laboratories to produce even more sophisticated weapons.

When you feel you have enough might to take on the enemy, you can send out an army to attack another player's sector. If the attack is successful you gain that sector and can build a tower there if you like. Alliances can be formed temporarily between two or even three players, but in the end there can be only one winner.

Your men may be assigned to various jobs – so that some are mining elements, some researching inventions, some off fighting and some simply doing nothing but reproducing. The more men you devote to a job, the quicker you can get it done. Any who are still breathing at the end of an island are usefully put into storage ready for the end of the game, modestly known as The Mother of Battles – but that's another story.

Mega Lo Mania has one outstanding attribute: sound. There isn't another game to touch it for samples; virtually every action you perform is accompanied by some kind of humorous sampled voice. So for instance if you use up all the elements in one sector a trouble-

There is a lot to become familiarised with initially, but soon everything falls into place and controlling the game is as easy as clicking on an icon

game you can only research and build primitive items such as catapults, but after researching certain weapons you move up a technology level. Tech levels are represented as a year – like 1850 – so in effect your technology is moved forward a number of years. This means the sophistication of the weapons you can produce increases, so for example you may be able to make swords and bows-and-arrows. Not all the weapons you make are offensive – defensive ones are necessary to protect your towers from enemy raids.

Everything you build needs certain elements as components. Each sector has one or more natural elements which are automatically collected by your men, but for the more advanced weapons many more are needed. In this case you need to construct a mine to

I CAME, I SAW,

The large number of icons, arrows and figures you need to be familiar with in *Mega Lo Mania* initially appears daunting. Fear not, though, because once you get the gist of the game you know almost instinctively what an icon does – and anyway, there's an optional help mode that explains each icon as you move the cursor over it.

- 1 The world map shows every sector on the current island and any towers or armies present in each one
- 2 Number of each player's soldiers currently in this sector. Clicking on the shield gives a detailed breakdown
- 3 Game speed indicator/control
- 4 Island name and the current tech level of this sector

at-t'mill voice tells you, "We're running out of minerals;" completing an invention in the factory brings forth a woman's voice in broad Cockney telling you that "The production run is completed;" and even when you pause a secretarial woman echoes "Putting you on hold". If these annoy you, (a) why? and (b) you can switch to music or sound effects, both of which are way above the average warbly blips that pass for sound in other games.

Fortunately the graphics haven't been neglected either. Although your men are very small, you can see the changes in them as they progress, and each weapon they use has a different graphic. The towers and other buildings are impressive and the whole shebang is nicely detailed and shaded.

VERDICT: MLM probably sounds impossibly complicated and about as exciting as watching the Open University,

but this is far from the truth. There is a lot to become familiarised with initially, but soon everything falls into place and controlling the game is as easy as clicking an icon. Sensible Software have managed to pace the game perfectly, so that you really have to work hard on some of the islands to get a sight of the more spectacular effects lurking there.

The game is also dangerously addictive and frustrating – frustrating because the password system only takes you to the beginning of an epoch, so if you complete two out of three islands and switch off, even with a password you still have to work through the first two the next time around.

Don't be fooled by appearances: underneath *Mega Lo Mania's* innocent exterior, there's one hell of a game waiting to take you eagerly by the throat. And once it does so, you won't want it to let go.

ED RICKETTS

MEGA LO MANIA

MIRRORSOFT £25.99

- Superficially similar to *Populous*, but the comparisons end as soon as you start playing
- Everything *Powermonger* should have been: inventive, detailed, annoying, addictive – and most of all, fun
- Unique among god-games – there's nothing that combines strategy and enjoyment so well
- Great humour, especially in the sampled voices that chime in all the time

STF RATING 94%



● As the sun sets over the first level, you know battle awaits you. You must rule all three islands before you can move to another archipelago. Strangely, though, all the islands' names begin with different letters of the alphabet and end in "A." Sillia and sillia!

MEET THINE ENEMY

Alliances are vital during the early stages of an island. If you can team up with someone else it means you have one less enemy to worry about, at least for the time being. Of course, you may be asked for an alliance yourself. Choosing the right person to befriend is another crucial decision. In certain situations you can use your ally as a blocker. In a bottleneck, their presence can stop the other enemies getting past to invade your sector. The other important thing to watch is that all your allies can become enemies again at the drop of a hat (or a nuclear warhead, for that matter).



● Scarlet leads the red people and she's no cowering wallflower – more like an ardent feminist. Ask her for an alliance and she usually refuses with a haughty "Hah! No." She's tough and invasive, so you'd better watch out.



● Oberon, yellow king, is a bit of a weed and has a very camp voice. He often timidly asks you, "Do you want to come on my team?" in such a pathetic way you want to stomp all over his people. Well, I did anyway.



● Green leader Caesar has a definite Italian accent. Beg an alliance and it's either "Si, si, why not, eh?" or "No, I donna think it woulda work." He's a bit of a side-switcher though, so watch your back (and your tower).



● Madcap is – er, mad. He leads the blue people and usually refuses an alliance with a "No way, buster!" Still, you'd probably feel the same way with that, um, thing stuck in your eye. He's quiet but explodes when he fights.

ICON-QUERED (OR, OMNIPOTENCE IN 19 EASY LESSONS)



- 5 Blueprints – shows you the "Ingredients" you need to build any item you've researched
- 6 Displays charts showing the defensive state of each of your buildings in this sector. When the bar disappears, so does your building
- 7 Shows any defensive weapons you've invented and how many of each you can create
- 8 Shows any offensive weapons that you've managed to invent during the game

- 9 The number of currently idle men in this sector
- 10 This icon reflects the buildings present (in this case a lab). You choose which item to research there
- 11 When you have a factory, you can make advanced items by clicking this icon and choosing a design
- 12 If you've built a mine, these icons show the elements being mined and the number of miners
- 13 This element can be collected without a mine

- 14 Alters the number of men mining each element
- 15 The mine itself
- 16 The laboratory
- 17 Your tower for this sector
- 18 The factory
- 19 Some weapons need more than one man to operate – these three men are wheeling a huge gun about

MICROPROSE GOLF

The most difficult sport to simulate on an ST (bar Himalayan Tortoise Poaching) is reincarnated yet again as *Microprose Golf*, but don't worry – there's hardly a golfing pun in sight as Ed Ricketts tees off (except that).



● There's only one sport which has a bigger snooze factor than golf and that's the annual Australian dung beetle fight. Now Microprose have come up with a simulator that promises to liven up the fairways in the shape of the exquisitely named *Microprose Golf*. Surprisingly, it's not half bad.

Almost as many people hate watching golf on television as hate snooker, but nearly everyone has dabbled on the greens at one time or another – and all of us have made complete fools of ourselves when the ball dribbles off towards the right for approximately four feet. It looks dead simple – just bash the ball as hard as you can towards the green – but you usually end up digging up most of the fairway when you miss the ball completely. It's all a little bit simpler with *Microprose Golf*.

Golf attempts to be the ultimate simulator. There are 11 sorts of game, ranging from Skins (where you play each hole for money) and Tournament (the standard 18, 36 or 72 hole game) to Threeball and Head-to-Head. Some of these are only accessible to players with no handicap, so just as in real life you need to win plenty of tournaments before you can play against the pros. Up to four people can play, including eight ranked computer opponents with customisable playing styles – if you're awful at putting, for instance, you can make your opponent even worse.

Instead of showing you the ball and the green and expecting you to get the one on to the other by any means possible, the game gives you the option of changing every fine detail to polish up your shot. If you think the default club isn't suitable, change it. Tee heights and even the way you stand affect a shot in real golf, and the same applies here. And all the time you must allow for the wind blowing your ball off course.

The graphics certainly pass "good" and could almost be described as "stunning." The fairways are covered with contours and show very clearly the changing ground height, particularly when the "camera" is following the ball across rolling hills and rivers. A

Replay option enables you to view each shot from several camera angles and save the most impressive straight to a disk. Because all the courses – and the objects on them, excluding the player – are actual 3D objects,

they can be viewed from any angle without needing sprites for each view, giving you some very realistic vistas.

There is, of course, a problem with this non-sprite-based approach: the objects, especially the trees, don't have all the detail they could – since they're constructed of polygons the little detail there is in the trees only appears when the ball stops moving. One other minor graphical gripe is that the golfer sprite is a little shoddy and badly animated, as if it has been added as an afterthought. The ball moves and bounces just as you would expect it to, though.

Surprisingly for a game with very little audio potential, effective samples have been used throughout – the thwack of the club meeting the ball, a splosh when you land in water and the swish of branches when you hit a tree.

VERDICT: There's very little to find fault with in *Microprose Golf* – so here's the very little. First, six courses seems like plenty to begin with but you soon need more. Further data disks are doubtless planned, possibly with some simulations of real courses. Second, £35 is a lot of money for a game. Unfortunately it seems increasingly to be the case that you have to pay "premium" prices for good games.

These reservations aside, *Golf* is a real gem. It easily takes the award for best golf sim for the ST – there's just nothing to touch it for detail, ease of use and impressive graphics. Most of all, it's fun – a feature which could easily have been lost amid the wealth of detail.

If you have even a slight passing interest in golf get this and you'll be addicted for weeks. All told, it's better than the real thing – you don't have to leave your chair for this. (There! Not a golfing pun in sight.)

ED RICKETTS

GOLF

MICROPROSE £34.99

- Nothing touches this on the ST – it makes *Challenge Golf* (page 85) et al look decidedly sickly
- Excellent graphics mean it's good to look at as well as to play
- The details really make it shine – how many other golf sims allow you to alter tee height?
- Pricey, but guaranteed to keep you playing for a long, long time

STF RATING 95 %

TAKING A SHOT AT THE ICONS

Icons – you can't live with them, you can't live without them. Well, you couldn't play *Microprose Golf* without them, anyway. They're scattered round the screens with a vengeance, and everything is controlled using them.

Shows green speed – very slow to very fast and all points in between



Enables you to select which sort of camera action should follow your ball

Indicates the lie of the ball – here it's in the light rough

Wind direction and strength

The essential power/swing meter. The outer arc shows the power and moves clockwise when you first hit the button. Click to stop the power and start the swing meter moving from the top down, and click a third time to stop it. The centre white area gives a straight shot while blue slices left or right

Gives the view from behind the flag looking towards your ball – very handy for double-checking slopes and suchlike

Enables you to access the course map to plan your shot

Within 20 yards of the hole, this overlays a grid on to the green. This grid indicates ridges, bumps, and slopes – left/right or uphill/downhill – which helps you set up your putt accordingly

Click this to start the power level rising

Change clubs – usually the default club is okay

Ed Sand Wedge 2 (3)

These arrows shift the direction in which you're facing very slightly to the left or right. Alternatively you can click directly on the part of the course you want to face

Adjust your stance – even small movements of the feet inwards or outwards can affect the size of the hook and slice areas on the power meter



● Putting is a much simpler affair than driving. Once you've worked out how hard and in which direction you need to hit the ball to get it across the green, just click on the arrow to start the meter rising. The centre mark gives you a useful indication of how hard you'd need to hit the ball if you were on a level green to hole out.

Hole	P	1	2	3	4
1	37	3	3	10	
2	37	4	6	11	
3	46	5	5	12	
4				13	
5				14	
6				15	
7				16	
8				17	
9				18	
				19	
				20	

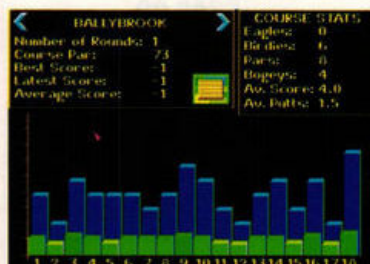
970 12 14

Handicap 28

Score

1: Ed (+2)

● The all-important score card. Obviously the idea is to score as many points as possible – the record so far stands at 423,000. The score here is pathetic – I mean, 2 points is nothing, is it? It's not easy, though – you have to find different places to put the ball without getting it in the little hole too often. Odd game, golf.



● Once you have played a round with a character you get the chance to save his profile to disk. This character is then updated every time you play, to take account of the changes to your handicap and stats. You can see these numbers in bar chart form where you can examine them right down to the stats for individual holes.



● Before each shot you see an overhead view of the course, with such details as the projected flight of the ball to aid your club selection. You can also adjust tee height, stance or rotate the course for a better view (on the right).

JUST ADD SOME SAND AND WATER



● Some courses have a considerable amount of the golfer's nightmare, water. If the ball lands in water and it hasn't yet touched land then you have to take the shot again; otherwise it's placed as close as possible (on land) to the spot where it went down.



● Less disastrous than water is sand – at least you can still take a shot from here. You do find the hook and slice areas drastically changed, though, and you may be in for a surprise if you take a shot as normal without studying the power meter. Note the small cloud of sand as the ball hits.



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WRECKERS

Typical – you've just put your head down for a month's cryogenic sleep when your space beacon is attacked by alien green blobs. Particularly nasty green blobs too. They eat their way straight through the hull of your space beacon and grow into bigger, deadly, plasma-bolt-firing green blobs. It's your job to save the day by fending off attacking waves of the little wreckers and keep the space beacon transmitting.

Luckily you have a few tricks up your sleeve. Along with your standard issue space-hero anti-plasma chemical gun, you have the services of three combat droids and the ability to produce more. Just as well, really – you soon need lots of them. You also have these amazing giant hoovers, which suck up the plasmodians before they reach the beacon.

Unfortunately your superiors have installed a "safety device" which blows up the joint if you can't clear the infestation quickly. With the clock ticking away, away you spend the game running around in a mad panic repairing the transmitters, shooting plasmodians and controlling the droids.

The space beacon is shown in 3D isometric view and the display scrolls in eight directions. You control each of your three heroes using the standard joystick controls. Some clever programming means you can dart around at a fair lick, although your characters have a very peculiar way of moving. They can only move in four directions and this makes it difficult to control them with much precision.

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The graphics are functional and well-designed rather than awe-inspiring. The droids are detailed but your main on-screen alter ego looks a little like a cartoon character. Scrolling is reasonably smooth and fast, and the droids float about nicely. The hoover machine is particularly well done. Sound effects are a mixture of samples and chip stuff and add to the atmosphere well – the mutant monster screams alarmingly as he crashes around, shaking the whole screen. (Oh, didn't I mention the mutant monster? Heh heh...)

VERDICT: *Wreckers* could easily have you pulling out your hairs pretty quickly. It's a frantic rush to save the station from the endless hordes of plasmodians. No sooner have you dealt with one attack or overheating transmitter than another crisis pops up. After some practice, however, the game becomes somewhat repetitive as you learn to deal with each wave of aliens. Particularly annoying is the way you have to



● As if invading plasmodians weren't bad enough, in this challenging arcade/strategy game you also have to cope with this ready-brek monster – in fact a mutated crewman who stomps around screaming and killing things. Even if you manage to dodge this tricky character you can bet the next wave of aliens is going to hamper your chances of fixing the transmitter. Not exactly original but *Wreckers* is absorbing nonetheless.

use the diagonals on the joystick to move around.

You'll either love or hate the mad dash to save the space beacon from destruction. If you survive the initial difficulties and develop some winning tactics, the game's long term interest is in doubt. But for those who like arcade shoot-'em-ups with tactics, this could be right up your street. It has a sort of manic quality to it.

CHRIS LLOYD

WRECKERS

AUDIOGENIC £24.99

Can run on single sided disks

- Very similar graphics and playing environment to *Escape from the Planet of the Robot Monsters*
- Quite an original concept but sadly it's been very badly executed
- Joystick controls similar to *Brat*. Having to hold the joystick diagonally in your hand makes it confusing to work out where you're going

STF RATING 68 %

THOSE VALUABLE ICONS



Countdown to self-destruct – you have to work very fast.

Your chap's lifeforce.

The space beacon's main systems status bars – generator power, atmosphere control and gravity control.

You need to make sure you constantly monitor any messages coming from the central computer.

Your plastic pals. You can have up to ten droids at your command, from lowly cleaners to very mean combat models.

Long range scanners – give you a little time to prepare for the rain of little green blobs.



● This is your first line of defence – a battlepod can come along and hoover up the invading alien green blobs with a satisfying sucking sound.



● Your second line of defence is to don a spacesuit and zap them before they eat through the hull. Air is limited, so try not to breathe too much.



● Your mechanical helpers. Managing you droids properly is vital. They complain if you mistreat them by – oh, shooting them, for example.

MAGIC POCKETS



You might think you kept a lot in your pockets when you were a kid, but the star in *Magic Pockets* has a bicycle, a giant gorilla, some snails, and a mountain tucked away in his. Ed Ricketts wonders what happened to all the boiled sweets and bits of purple fluff.

Kids! Don't you just ha - love them? The software companies apparently do - we've had a spate of games recently featuring mischievous little - er, sprogs, the most famous of which is probably *Brat*.

Magic Pockets features a sprog, too - one called the Bitmap Kid. This

Kid has lost all his favourite toys in the depths of his less-than-ordinary pockets, which isn't surprising when you consider how large they are. The only way to get them back is to enter the pockets themselves (the contortions don't bear thinking about) and find the damn things.

What all this amounts to is a platform game played over four worlds - a

cave, a jungle, a lake and a mountain - each with at least five levels. Every level has the ultimate aim of finding a particular toy and leaving with it (although it's not absolutely necessary to get the toy to leave). Along the way you encounter the denizens of the Kid's pockets, none of them eager to help you - quite the opposite: they eat your sweets, get in

Magic Pockets is just another platform game but its style and execution are absolutely wonderful

your way, attack you and even steal your precious toys for themselves.

Of course, you do have a weapon to get rid of these monsters, which varies from world to world. In general, the longer you hold down the "Fire" button the bigger your shot becomes. You can use these large shots to go into a tumble, which sends the Kid whizzing around the screen. While he's in a tumble the Kid is invincible and instantly kills

anything in his path. It's possible to trap monsters in the largest shot of the current weapon. If you jump into such a monster then you're rewarded with either a power-up or bonus sweets; the harder you hit it the more sweets you get, so it's a good idea to tumble into one if you can manage it.

Pockets has a complex bonus system. For every monster you kill the value of the sweets you get from a trapped monster increases, until you reach the next 5,000 points; then you get power-ups instead of sweets, which also increase in power as you kill more monsters. These power-ups range from a milk bottle, which gives you an extra life, to a Speedball helmet which not only makes you invulnerable but kills everything you touch. With a bit of luck and skill you can choose how you're going to play your game by collecting the appropriate power-ups.

All this bounding about is accompanied by some nifty graphics in the distinctive and detailed Mark Coleman style. The Kid is suitably chubby and very streetwise, with his baseball cap and trainers, while most of the monsters look completely fed up. Everything's nicely animated, though some of the effects look as if they've been taken straight from *Gods*. The audio effects are unfortunately sound chip stuff only, though they fit the arcade atmosphere nicely and aren't too intrusive. The touted Betty Boo soundtrack was created with *TCB Tracker* and is surprisingly good, though of course it's only heard at the beginning of the game.

VERDICT: Just when you think the platform genre has gone green and is starting to smell a little strange, up



● The Bitmap Brothers bring you *Magic Pockets*, a tale concerning a small *Brat*-like and the huge number of useful things he keeps in his voluminous pockets.

THERE'S JUST SNOW FUN IN HERE

Your weapon changes from world to world. Although they all work in basically the same way, their execution varies. In the first two worlds using your weapon properly (no sniggers) enables you to go into a tumble.



On world one, the cave, you can use whirlwinds. You can wrap up the monsters in them before you jump 'em, but they can be used more effectively. Just fire and pull down to make wind and then stand in it. Quickly pull down again to go into the killer tumble.



You wield a mean cloud in world two, the jungle. You can use it for more than just tumbling. When each cloud disintegrates it releases a drop of rain. Direct a cloud to rain over a stump and a plant grows, creating a whole new set of platforms for you to mess around on.

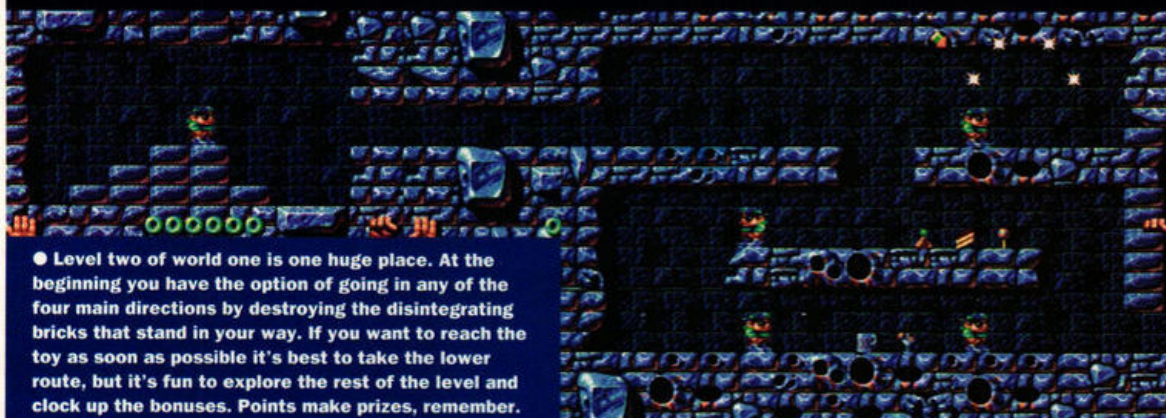


World three is set on a lake, so most of the time you're trying to stay out of water - unless you can find the diving helmet. Your weapon can help here - you throw blocks of ice into the water which freezes the surface, enabling you to walk across at your leisure.



The final world represents a mountain. Because you're high up it's very snowy, so snowballs for weapons seem logical. If you roll a normal-sized snowball along the ground it collects more snow and grows bigger, finally ending up as a huge monster-trapper. 'Snow joke!

WHERE'S MY POCKET MAP? (OUCH!)



● Level two of world one is one huge place. At the beginning you have the option of going in any of the four main directions by destroying the disintegrating bricks that stand in your way. If you want to reach the toy as soon as possible it's best to take the lower route, but it's fun to explore the rest of the level and clock up the bonuses. Points make prizes, remember.

Going right (past a few snails) takes you to this small cavern. There's nothing to be gained by jumping across the gap – it doesn't lead anywhere...

...so drop down the gap and onto the ledge with all the goodies, avoiding all the snails...

...and onto the floor (although throwing Maltesers at the snails probably won't do a whole lot of good)

Leave by the right-hand wall, once you've destroyed the crumbling bricks to let you through. Then: onwards and downwards...

pops another game to prove you wrong. *Magic Pockets* is, after all, just another platform game, but its style and execution are absolutely wonderful. The Bitmaps have included enough small details, incentives, power-ups and complexity of play to keep you interested

discover new details and features.

However critical you may be, you can never find much wrong with a Bitmap Brothers game, because they always manage to deliver the goods. With *Magic Pockets*, they've come up with their best game yet.

ED RICKETTS

MAGIC POCKETS

RENEGADE £24.99

- Similar to *Gods*, but much more light-hearted and not quite as difficult
- Bonus systems are as old as the hills, but none have been quite as involved or useful as this one
- The best platform game since *Switchblade 2*

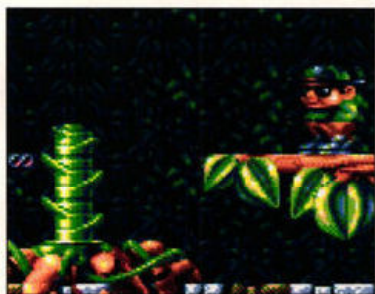
STF RATING 90 %



● Before you can leave each world there's the equivalent of the end-of-level monster. The first world gives you a race on the bicycle against Rockies, while on the second you have to beat this huge gorilla with the boxing glove.

Some of the effects look as though they've been taken straight from Gods

for a very long time – and just when you do start getting bored, you reach the next world and everything changes. Most of all, the game is great fun to play – you can be at it for hours and still



● Just about the last thing you'd expect to find in the middle of a jungle is the whirly bit out of your mum's old twin-tub. Perhaps it's a relic from an ancient utilitarian cult of mangle-worshippers.



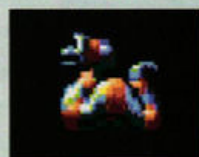
● Snails are odd creatures. Sometimes you charge in to attack, but one stops you. Hiding under its shell it becomes invulnerable. Your tactic? You hide too, and wait for it to come out.

WELL, FANCY EATING YOU HERE

Your enemies from world two are just as annoying as those snails and Rockies from world one, if not more so because most of them are airborne.



The bees are harmless, providing you keep out of their way, but once they spot you they zoom in with their stingers armed at the ready – and they're very hard to kill.



These snakes may look a little familiar if you've played the Bitmaps' previous big hit, *Gods*. Again, these aren't the brightest of creatures, but some of them are certainly pretty nippy.



You encounter two sorts of ape during your travels through the levels: the innocent jungle dwellers who are quite happy to live and let live (unless you get in their way, that is)...



Mosquitoes are frankly a little stupid, just like in real life, buzzing around in small areas and getting in the way when you least want to see them. Make sure you remember to bring your fly squat with you.



You may think you could avoid venus fly-traps but these aren't any old vegetation – they uproot themselves and walk around. They're not just after you – any mosquito that strays too close has had its chips.



and Roamers who are on the lookout for trouble. Once they spot you they beat their chests and leap around in your general direction. They're also very good at climbing the vegetation too.

Railroad Tycoon



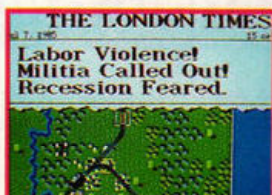
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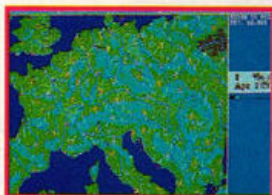
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MICROPROSETM
SIMULATION • SOFTWARE

MicroProse Ltd. Unit 1, Hampton Road Industrial Estate, Tetbury, Glos. GL8 8DA.

IBM screen shots shown. Actual shots may vary.

CHALLENGE GOLF

Karl Marx once called golf "the opiate of the masses." He realised he was wrong of course, so he changed it to religion, but the fact remains that golf is more popular now than ever before. Consequently a plethora of golf games has appeared recently.

Joining the fray is *Challenge Golf* from On-Line Entertainment. It sticks pretty much to the standard format. There is a choice of four courses (selected from a strangely detailed relief map of the world.) Select a course and you can start. You watch a little character swing his club, judge the correct strength on a power meter by hitting the mouse at the right moment,



● It's the *LogoLand Open*. The greens are a bit blocky, it has to be said.

then try and do the same on the direction meter. The whole thing takes about half a second so you need to be quick – and a good mouse also helps.

You're automatically faced in the direction of the pin and given the best club. You can change clubs and alter the direction, using a red arrow under your feet. Use the on-screen map to point in a different direction (on dog-leg courses for example). It's not an effective

TEE GREEN GOLF PUN

How you cope with the high-tech Golf War

Course name and player

Wind speed and direction

Hole details

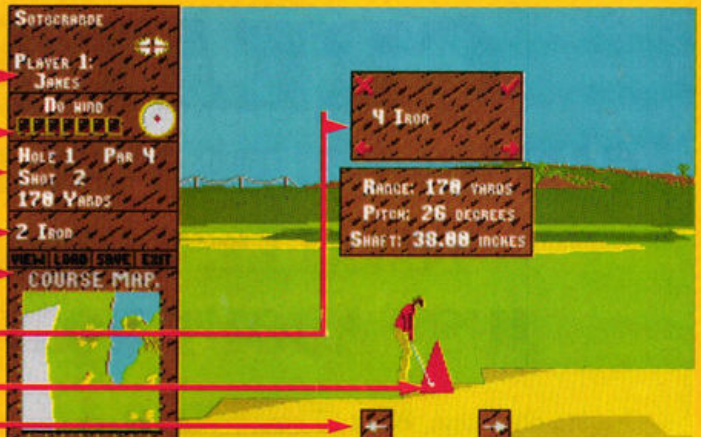
Club currently selected

Course map. Large scale directional changes are made here

Club details (for changing clubs from automatic selection)

Direction Indicator

Direction controls. These make minor changes to the ball's flight



● Try and pitch the ball above those large wooden information placards.

system but it works when you're used to it.

Once you've hit the ball and watched it bounce off unconvincingly, the display cuts to a 3D overview of the course. The shot is replayed so you can see where you are in relation to the green. Then it's on to the next shot. If the pin distance isn't great you're given a shorter club and off you go again, until you get on to the green.

Once there, you see a rather blocky top view of yourself, the hole and a large arrow indicating any slope. There's also an aiming line which you can swivel to compensate for it. Clicking the mouse on a moving scale

decides the power, then you watch the ball roll along. And here's the biggest headache of the game: it's very difficult to get the ball in the hole. No, I'm not just crap at it – the parameters for a "hole out" are set too strictly. The ball can actually roll slowly right over the hole (or even stop on top of it) without going in. It's infuriating, and makes all your skilful driving and chipping worthless because you can drop dozens of shots within inches of the hole.

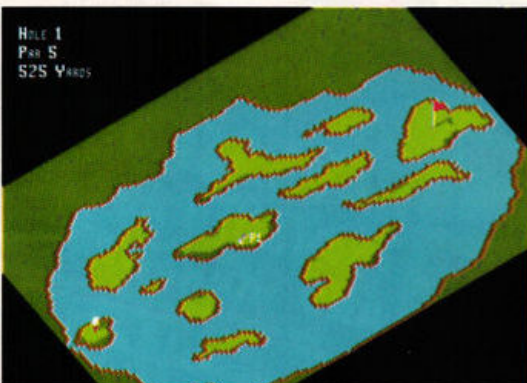
VERDICT: *Challenge Golf* isn't really a contender. The graphics aren't very impressive; they're blocky and slow to update. The sound is virtually non-exis-

tent. Ball thwacks are all there is. And if the ball drops into water you get silence and the word "Splash" on the screen!

Playability, too is below par (oops, sorry). You don't have enough control, and once you've mastered the timing of the gauges that's about it. The greens are irritating to play, and the ST actually moves the position of the ball between shots to line it up with the compass points. This could be a result of lack of memory or poor programming, but it doesn't exactly elevate the gameplay.

If you're after a decent golf game, this isn't it. Just be thankful that there are plenty of others around which are.

JAMES LEACH



● Global warming has left St Andrews looking more like Rhyl Sun-Centre than fields of unnaturally trimmed grass.



● A very nice shot but now how are you going to get all the way to the green without soaking your dayglo?



● Here we see how the masterstrokes are delivered by a true professional. If you can get a drive right then it's pure pottery in motion.

CHALLENGE GOLF

ON-LINE £24.99

Can run on single sided drives

● Slow and rather inflexible. Doesn't compare well to *Microprose Golf* (reviewed on page 78).

● The graphics aren't as clever or impressive as those in *World Class Leaderboard*.

● Not as flexible as either of the above games. Too many things are done for you.

STF RATING 52 %

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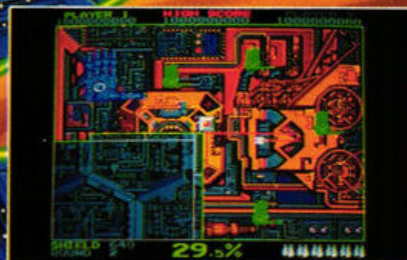
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SCREENPLAY EXTRA

This month's roundup of late or not-so-great games kicks off with the first four releases from Gremlin's new budget label, GBH, now out at £7.99 each.

SUPERCARS

With the car racing game *Supercars 2* doing very nicely thank you for Gremlin at the moment, it was inevitable that their budget arm would release its prequel. Frankly, there's very little to tell between the two.

Like its successor, *Supercars* is viewed from overhead, and also requires you to bomb round a track hitting hell out of all the other cars in a bid to

reach and retain first place. The tracks feature all the usual twisty-turny bits and those awkward 90 degree corners which slow you down at every opportunity. Then there's the other cars, who just won't leave you alone.

Thankfully, if you win a race and clock up some cash you can visit the garage and buy the usual motoring accessories you'd find in any Halford's, like missiles, armour plating and turbochargers to show the others who's boss. Or – eventually, after a few wins – you can trade in your old car for the



● Some way into *Supercars 2*, you may discover that turning corners is a better option than crashing into them and hoping you bounce off in the right direction

brand new (and very expensive) model, after negotiating your way round the smarmy salesman by matching the right answer to his question.

So if you're thinking of getting *Supercars 2*, why not save a few pounds and get this instead? It's virtually identical. The graphics are nicely drawn and colourful – though the cars themselves are a bit of a cop-out – and there's nothing wrong with the animation. For well under a tenner you'd be silly not to choose this one.

STF RATING: 74%



● Implausible Caption No 23 (collect them all): While painting his chic new "house without walls," Terry (the eight-way rolling ball, you remember) is overcome by fumes and begins floating away to the *Cloud Kingdoms*

CLOUD KINGDOMS

Great Intro Sentences of Our Time: "Terry was a small, green, eight-way rolling rubber ball." Another example of games programmers' fascination with balls, this – not to mention bad puns. Playing the part of Terry Ball (there goes the pun), for some reason or other you have to roll and bounce around

some precarious platforms high above the earth in a quest for keys and magic crystals. There are (of course) Bad Insect Monsters and (naturally) Giant Rolling Blackballs who don't really have anything better to do than roll around (hence the name) and get in your way. These have to be bounced over – or failing that, crashed into. The latter course probably isn't a good idea, though, because it sends you sailing over the side with a surprised look on your face. (Balls have faces, didn't you know?)

Cloud Kingdoms might be a very good game if it wasn't for the control system. To be blunt, it's a bugger. Just

as you get used to rolling about the platforms without falling off, along comes a blackball and you have to try to bounce over it without slipping off the other side. Not only that, there are secret trapdoors which open without any warning at all and also send you to your doom. In fact, everything combines to make life hell, and playing the game is just a smidgen too difficult to be fun. Still, the animation and graphics are enjoyable (the rolling blackballs in particular), so you might like it, even if it's just to complete your collection of games with balls in them.

STF RATING: 68%

FOOTBALLER OF THE YEAR 2

Before you run and hide, *FOTY 2* (surely "Footy?") is not just another footy sim – it concentrates more on the management side of things. As a player in a Superleague, you have the chance to spend money on a certain number of "goalcards" each week, which give you the opportunity to score a goal. The



● How to Spot a Sportsman From Quite a Long Way Away: No 1, *Footballer of the Year (2)*. Next month: *How to Steal Lines From Classic Comedy Programs Without Being Done for Plagiarism*.

more cards you buy, the more chances you get. Certain tactics are displayed before each match, showing how your teammates are going to arrange themselves in front of the goalmouth. It's your job to remember your part of the plan and be in the right place at the right time to boot the ball into the net. Miss and you're in disgrace. There's no game as such, just these short set-pieces before the goal.

You also have the chance to play double or nothing by answering a trivia question on the history of football. Or if you feel your club is a dead loss, put yourself on the transfer market and try

to get moved somewhere else.

FOTY 2 is a weird hybrid of management games. There's actually very little to do, save buy goalcards (what the hell are goalcards anyway?), get involved in what little action there is and watch your statistics do nothing at all. Most of the screens are text displays with the odd menu, but the animation on the "action" bits is adequate, though it wouldn't win any awards. On the whole, the concept just doesn't include enough to do to keep you interested for any length of time. Different doesn't always necessarily mean good.

STF RATING: 67%

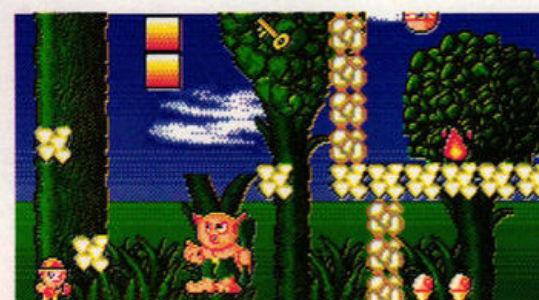
KID GLOVES

More Millennium tomfoolery from Gremlin. This time it's a platform game starring the eponymous Kid. There's really very little to mention here that you haven't seen a thousand – nay, a million – times before. It's a flick-screen game that presents you with the usual range

of creatures you avoid with well-timed jumps, and the standard collectables – keys, money, food and the like.

You really would have to be desperate to get something like this. It's devoid of any originality, gloss or interest, the graphics are poor and badly animated and there's simply nothing here at all to make you want to play. Not exactly Gremlin's finest hour.

STF RATING: 44%



● *Kid Gloves* (some parents are really cruel, aren't they?) wonders how he got conned into being in this awful game with awful graphics and an awfully high price for this sort of rubbish. In this case, GBH ought to stand for Go Buy Another game instead

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→ VIRTUAL WORLDS

Domark £29.99

With the news that 3D Construction Kit – which generates Freespace landscapes – has made Domark over a million pounds, it's a logical step for them to release most of the Freespace games in one compilation – as a tutorial aid to show all those 3DCK owners just what it can do, natch, not as an attempt to cash in, heavens no!

The games featured are *Driller*, *Total Eclipse*, *Castle Master* and the previously unreleased *The Crypt* (sequel to *Castle Master*). *Driller* was the first Freespace game and originally appeared on the 8-bits. The planet Evath is about to bust a gut because of the gas building up inside it. It's your job to traverse each of its 18 sectors (when you've figured out how to enter them in the first place) and place a drilling rig to release at least 50% of the gas in every sector. You find the correct place either by trial or error or following the subtle clues littered around, such as the bloody great cross on the ground in some sectors. Rigs can be moved once placed, but that costs plenty of energy, something you're not exactly rolling in. However, you can find energy crystals here and there. As if all that weren't enough there are puzzles to confuse you, enemy defences to shoot at you and a time limit.

Driller really is a very good game. For once the plot is an integral part of the gameplay, the game is fun to play (a mixture of arcade and puzzle genres) and the polygonal 3D Freespace display is well suited to the futuristic and blocky objects you come across.

● In two hours the moon will totally eclipse the sun, triggering the curse of Re, causing the moon to explode and shower the earth with meteorites, plunging civilisation into a dark age of starvation and conflict. Which probably isn't a good thing, on the whole. That's the plot of *Total Eclipse*. What you have to do is to enter a pyramid deep in the heart of Egypt, work your way up to the shrine at its apex and destroy it to stop the curse from taking effect, all within two hours. This involves you in the usual

shenanigans: winding your way through the puzzles, locked doors, sliding platforms, red herrings and so on, while keeping an eye on your water level (which equates to energy). *Total Eclipse* is probably the least well done of the four games featured here; the graphics have the obvious Egyptian slant, but aren't really up to conveying the atmosphere in a convincing way. Gameplay is what you've come to expect from a Freespace program: nothing too taxing but occasionally annoying and limited.

● *Castle Master* is generally reckoned to be the most accomplished of the Freespace collection, in both graphics and gameplay. Simply put, your twin has been imprisoned in one tower of a castle and – well, you can probably guess the rest. Gameplay is much the same as in *Total Eclipse* – plenty of exploring, object collecting and mapping, though this time there are spirits flitting around which sap your energy if you don't kill them off sharpish. Samples are well used, too. Most events of any import are accompanied by the appropriate



● Darned clever mousetrap in the *Crypt*, this. The mouse enters, sits in the comfy chair, settles down to eat the cheese and suddenly spots the putrid colour scheme, at which point it drops dead from fright. Ingenious, no?

sound effects, even if some of them are cut off rather abruptly.

● *The Crypt*, unfortunately, is a virtual re-run of *Castle Master*, using the same graphics, the same presentation and almost the same gameplay. You'd think you were playing the same game. It's a bit of a con, really.

Overall the collection is sound, though if you play the games one after another you realise just how similar they all are. Just change the style of the graphics, the plot and perhaps the controls a bit and you've got a new Freespace game. Still, there's a lot to keep you busy if you really want to finish each game. Strangely enough, *Driller*, the oldest title here, comes out best, perhaps because it really does have a plot and a purpose rather than just an excuse to wander around in 3D. And let's face it, they're hardly Virtual Worlds, are they? When was the last time you saw a circular pond with square edges?

STF RATING: 78%

FORMAT RATINGS REVIEWED

How did *FORMAT* rate the games currently in the shops?

MICROPROSE GOLF	page 78	95%
JIMMY WHITE'S WHIRLWIND SNOOKER	page 72	94%
MEGA LO MANIA	page 76	94%
FLIGHT OF THE INTRUDER	page 68	92%
HUNTER	STF 26	92%
MIDWINTER 2	STF 26	92%
ARMOUR GEDDON	STF 26	91%
F-15 STRIKE EAGLE 2	STF 26	90%
MAGIC POCKETS	page 82	90%
Games Summer Edition	STF 26	88%
Germ Crazy	STF 25	88%
Talespin	STF 25	82%
California Games	STF 25	81%
Switchblade 2	STF 26	81%
Impossible Mission 2	STF 25	80%
Maupiti Island	STF 26	79%
Champion of the Raj	STF 25	78%
R-Type 2	STF 26	78%
Toki	STF 25	78%
Virtual Worlds	page 90	78%
Crime Does Not Pay	STF 25	77%
Logical	STF 25	76%
RBI2	page 70	76%
Atomino	STF 26	74%
Supercars	page 88	74%
The Ball Game	STF 26	73%
Fantasy Graphics Disk	STF 25	73%
Creepy	STF 26	72%
LED Storm	STF 25	72%
Life and Death	STF 26	72%
Navy SEALS	STF 25	72%
Billiards 2 Simulator	STF 26	71%
Forgotten Worlds	STF 25	71%
Gary Lineker's Hot Shot	STF 25	69%
Cloud Kingdoms	page 88	68%
Impossamole	STF 26	68%
Prehistorik	STF 25	68%
Wreckers	page 81	68%
Footballer of the Year	page 88	67%
Shadow Dancer	STF 25	67%
Tom and the Ghost	STF 25	67%
Outzone	STF 25	66%
Barbarian	STF 25	65%
Bionic Commando	STF 25	63%
Famous Five on a Treasure Island	STF 26	61%
Mercs	STF 25	61%
Switch Blade	STF 25	58%
Challenge Golf	page 85	52%
Snott	STF 26	52%
Street Fighter	STF 25	52%
Frenetic	STF 26	51%
Kid Gloves	page 88	44%
Sharkey's Moll	STF 26	39%



● Some things you ought to keep in mind in *Driller*: 1. Beware of the huge pyramids. 2. Beware of the guns that fire at you. 3. Beware of eating too much and getting that embarrassing gas build-up in Lapis Lazuli.

WANTED

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Screen shots are only intended to be illustrative of the game play and not the screen graphics which vary considerably between different formats in quality and appearance and are subject to the computers specifications.



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GAMES

BG.01 Monopoly; Classic property game. Plus: Chess, Backgammon, USA Football.
BG.02 Haunted House; Platform game. Plus: Daleks, Aggravation, Warzone...
BG.06 DGDB; Gauntlet style game. Plus: Stone De-luxe, Breakanoid and Fruit Machine Simulator.
BG.14 Invasion; STAC produced text and graphics adventure. Plus: Cluedo style detective game and Paranoia...
BG.17 Spooks; Super Pac-Man version. Plus: Pipe Panic; arcade favourite!
BG.18 Megaroids; Asteroids version. Plus: Line Up 4, Hangman, Explode, Blaster, V-Kill; Virus Killer.
BG.19 Cards; Cribbage, Poker squares, Solitaire, Klondike, Blackjack. Plus: Rubics Cube, Fun Face...
BG.20 Dungeon Master; Maps of levels showing doors, treasure etc. Plus 40+ pages of information, hints, tips...
BG.24 Give us a break; version of the pub snooker/trivia game.
BG.27 Strip Breakout; Knockout bricks to reveal a naughty picture...
BG.34 Assassin; Excellent graphic adventure written with STAC.
BG.43 Wizards Tower; Superb text and graphics adventure written with STAC.
BG.44 Zoltar II; Super shoot-em-up game with digitised sounds!
BG.45 Orbit II; Superior Arkanoid copy, compiled STOS game!
BG.47 Vegas Gambler; Professional Casino style games: Roulette, Poker, Blackjack and Slot Machine!
BG.55 Froggy; Classic road crossing game. Plus: Caves of Rigel; maze game.
BG.56 Cribbage; Checkers, Yahtzee, Target and Joust, Arcade classic!
BG.57 Dungeon Master - NEW Dungeon created using Dungeon Master Editor! Original Dungeon master required!
BG.58 Soko; Original addictive 50 level puzzle game. ST Format ****
BG.59 Bubble Trouble; Smooth Pacman variation. Jumpster; Q-Bert style...
BG.62 Millipede; very good version of the old arcade classic.
BG.64 Stumped; STOS produced tactical cricket game. STOS not needed to run!
BG.65 Joust; Arcade game version. Space War; space strategy game.
BG.66 Mystic Well; Dungeon Master style role play adventuring game.
BG.67 Temon; Shoot-em-up construction kit produced arcade game.
BG.68 Die Alien Blob; SEUCK produced vertical scrolling action game.
BG.70 Hac-Man; Very professional Pac-Man version. Plus: Hero; Gauntlet style game.
MG.01 Bolo; Arkanoid variation, bat can move all over screen! (colmon).
MG.04 Bumper Jack; STOS produced platform game. Plus Yatz; dice game.
MG.05 Mars Maze; another excellent STOS produced platform game.
MG.08 Star Trek; Next Generation; Battle the Ferengi in this strategy game, digitised samples! (Not STE)

UTILITIES

BU.01 Neochrome MASTER; Will now load Degas and IFF format! Animation fully implemented, total keyboard control, object rotation, 10 screens, rasters.
BU.07 STWriter ELITE; high quality word processor. Fully documented!
BU.29 Label printing accessories; address, disk and cassette labels.
BU.34 B-Boot; Enables booting from drive B, address book, database etc.
BU.36 Assistant Chef; excellent recipe database for the cooks...
BU.37 Pools; expert results predictor, includes large match database!
BU.39 Fractal Zoom; comprehensive fractal generation program.
BU.42 GEM fonts; 60+ fonts for hi-res screen and Epson printers.
BU.44 .IMG utilities; convert Degas, Neo, Tiny etc. to .IMG format!
BU.45 Planetarium; Astronomy, view the stars from anywhere in the world.
BU.46 Mouse Pointer; design your own pointer! 50 shapes included! etc...
BU.47 Eplan; CAD program for design of electrical circuits, documentation on disk. Print out finished circuits!
BU.48 Home Accounts; up to 3 different statements; 100 entries per statement.
BU.49 Typing Tutor; excellent English typing tutor. Includes exercises on home keys, numbers, capitals, etc...
BU.50 GEM Font Master; super font editing program, use 3 resolutions!
BU.53 Opus spreadsheet + charting program - quality shareware! (D/S)
BU.54 Amateur Radio Utilities; Morse tutor, Grayline calculator, etc.
BU.56 Your second manual to the Atari ST, invaluable reference book...
BU.57 ANI-ST (formerly Aegis Animator costing £79.90!) + GFA Raytrace demo!
BU.58 FSelect; alternative file selector, Desk Manager; Choose auto programs & accessories etc...
BU.59 ZX81 Emulator; including 38 program files! Uses the original keyword entry system. Brilliant!
BU.60 BBC Emulator, + Apple Emulator, accessories; CPanel & Disk Cache. Disk Toolbox; useful disk utilities!
BU.61 ZX81 Programs; 100+ files to use with ZX81 emulator (BU.59), 3D Defender, Pacman, Chess...
BU.64 Fractal Landscape Explorer, Mandelbrot show, Spirograph...
BU.67 Cardfile; Simple name and address database with search facility.
BU.68 Magniwriter; ST Writer version with larger text! Ideal for use on TV, for children or poor eyesight!
BU.72 STE Boot disk; enables STE to boot up in medium resolution! etc...
BU.73 Noisetrapper; Conversion of the Amiga PD music program; Soundtracker! Complete with sampled sound modules.
BU.74 Electronic Bank Statement; keep your bank account under control!
MU.05 Sheet v2.0; powerful spreadsheet with documentation and tutorial, Lotus compatible, 1280 rows x 280 columns!
MU.07 Gemini; superb NeoDesk style desktop replacement! German origin.
MU.12 Hard disk utilities; invaluable aid to hard disk users...
MU.13 F-Copy 3; Superb copier, will even backup some copy protected disks! Features: Fast Format, Virus Check, Scan Disk, Multiple copy, Verify...

EDUCATIONAL

BE.01 Things to do with numbers; full working demo! Plus: Kid Publisher...
BE.02 Kidprogs; Kids Graph, Kids Grid, Kids Music, Kids Piano, Kids Notes...
BE.03 Kidprogs; Kid Potato, Kids ABC, Kid Sketch, Kid Story...
BE.05 Colourbook; Fun for the younger child, an on screen colouring book!
BE.07 Word Extract, word puzzle help. Plus: Starchart; astronomy program.
BE.08 Geography Quiz; good educational game, plus Maths Made Easy.
BE.09 Spelling Made Easy, educational program that talks to you!
BE.10 Jigsaw; load any Degas picture as jigsaw puzzle! Great fun!
BE.11 KShapes and KShapes Plus; great Fuzzy Felt style fun for youngsters!
BE.12 Shipwreck; Answer sums in this fun game! + Guillotine Man; Hangman.
BE.13 The Wolf and 7 kids; superb multi-choice adventure game for the little ones. Race Cards; give answers to addition sums to race cars. Great!
BE.14 Noah's Ark; unscramble letters to make names of animals.
ME.02 EZGrade; teachers grading prog. Molgraph demo; 3D molecular display. Easel ST demo; loads desktop picture.
ME.04 Search; good historical study program created with STAC.
BE.15 Body Shop; Learn about Human Anatomy, build skeleton and assemble organs while learning correct names.
Dot to Dot; join the dots to discover the hidden picture! Also, design your own dot to dot picture. Both programs are great fun for young children!
ME.05 Play Spell; 2 levels from this great educational platform game. B.Spell; spelling game with digitised letter sounds & speech!
ME.06 Kid Publisher Professional; Desktop publishing for youngsters! Plus; Super Kidgrid; picture maker. Kid Painter; simple paint program. Design jigsaw type puzzles with ease! (Demos; save/print options disabled!)

CLIP ART

DC.01 Small symbols; seasonal, flags, school, cars, Disney, creatures...
DC.02 Titles, headings, Christmas, Easter, Halloween, golf, sports...
BC.03 Logos, Trade marks, symbols, people, food, magazine titles...
DC.04 Alphabets, Christmas symbols, lots of eyes, happy, sad, weird...
DC.08 Garfield, Beano, Dandy pictures. Picswitch enables easy view & print!
DC.09 Viz Magazine; comic pictures, plus culinary; utensils, food...
MC.01 Boys and Girls; Pictures of small children at play.
MC.04 Illuminated Letters; Fancy A to Z. Plus; Funny pictures...

MUSIC

SO.01 Midi Special; Steinberg switch, 32 track sequencer, midi channel scope, hi-tech trivia.
SO.02 Composer; enter notes from midi keyboards or computer, copy, transpose or output. Plus: Soundcomputer.
SO.03 16 Voice Synthesiser; multi voice record, filter of controllers, variable resolution metronome...
SO.05 Alchimie Jr.; powerful midi sequencer, many features! (mono) (D/S).

HELP

DA.01 66 Adventure game solutions! Including: Future Wars, Bards Tale, Indian Jones, Zork 1, 2 and 3...
DA.02 62 Adventure game solutions! Including: Leather Goddesses, Kult, Ultimas 1 to 5, Space Quests...

DEMOS

BD.26 Snowman; digitised animation and music. 1/2Mb version! (D/S)
BD.33 STE demo; See what your STE is capable of and be amazed!
BD.34 What the Butler Saw; end of the pier style fun. Slightly naughty!
BD.38 ANI ST; 2 excellent animations produced with ANI ST (see: BU.57) Juggling Lamps and the Trash Can demo.
BD.39 Teenage Mutant Hero Turtles; Excellent sample of the Turtles theme tune plus picture. Great one for kids!
BD.40 Smooth Cyber Studio produced animation featuring a space station revolving on a starry background!
BD.41 Monarch; Impressive animation with excellent graphics and music.
MD.15 Snowman; digitised animation and music. Brilliant! (Mb)
MD.21 The Brilliant UNION multi demo colour monitor & joystick required!
MD.22 UNION Demo 2; The cuddly demo! Lots of amazing animations accessed by moving an arcade style jetman!
MD.28 Whataheck; demo collection by the Carebears again. Stunning!
MD.30 Cyber demos; Buzy Bee, Saturday Morning Workout, Chasers, - superb animated films from Cyber Studio.
MD.32 STE Demos; 400 colour version of the Amiga classic BOING demo. Movie ST; Animation using hardware scrolling & blitter routines!
MD.35 Aliens; digitised sound and pictures from this Sci-Fi classic!
MD.38 Probe; Animation of a Voyager style space probe slowly spinning in space then moving around a planet.
MD.41 Robocop; Digitised samples of some of the more memorable sections of the film plus digitised sound! Approximately 7 minutes long and comes on 2 packed disks! (not STE).
MD.42 When Harry Met Sally; The very amusing bit from the film where Sally demonstrates to Harry how to fake...
MD.43 Star Trek; Good sample of the opening sequence from the TV series plus a superb Enterprise animation...
MD.47 Police Squad; sampled opening sequence of this great series! (Mb)
MD.48 Jungle demo; graphically super amusing cartoon style animation with sampled music and sound effects! (STE)
MD.50 So Watt; Care Bears do it again. Great sounds and mega smooth graphics.
MD.51 Dark Side of the Spoon; superb collection of stunning demos!
MD.52 Robomix Demo; digitised scenes from the film with sampled speech, sound effects and soundtrack!
MD.53 Chad Jackson; hear the drummer get wicked; Stos Maestro, Neochrome used on this sampled sound demo!

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SW16 2JG. Tel: 081-769 9568 (Enquiries)**The
Midnight
Oil**

Whew! What a summer. No, obviously not the weather, but for British football. On June 9th, I cheered myself hoarse at Wembley as the Monarchs took the first World Bowl. A few weeks earlier, Man. Utd. proved the "experts" all wrong about the quality of British soccer, when they easily beat Barcelona in the European Cup Winners Cup Final. United played 9 European matches without a single defeat. And now, a new NFL season, and Arsenal, Spurs, Liverpool and United back in Europe. Football's back!!!!

It's been a busy summer for game design too. In 1983 I wrote my first game "League Division One" for the BBC Micro. Subsequently "Mexico '86", "Soccer Supremo" and "Rome '90" appeared. But it was "Division One '85" that really hit the button for most fans. It was the game, unlike any other computer soccer game I know, which took soccer seriously. So, this summer, it had to be "Div One '92" for the Amiga and ST computers. It's six times the size of '85" and I believe it will have the same impact. Call me if you want to chat about it.

Malcolm Howard

DIVISION ONE '92**"HUGELY ENJOYABLE, BUT DANGEROUSLY ADDICTIVE."**

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Soccer management is about judgement. Judgement of a player's skills and the combination of skills that make up an effective team. Judgement of an opposition's skills and the tactics that will ensure that your team's skills overcome those of the opposition. This season's league champions will be managed by the guy whose judgement proves correct more often than that of his fellow managers.

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A & B Computing

The new NFL season is looking fascinating. The Bills, the Bears, the Raiders and the Chiefs all looked good last season, and with the 49'ers returning to earth, and the Giants likely to be affected by Bill Parcells joining Bill Walsh in the commentary box, the SuperBowl could go to one of many teams. And who will be the top coach this season?

"HeadCoach V3" has been designed for lesser mortals, like you and me, to pit their wits and knowledge of American Football against the giants (sorry about that) of the game. Through the seasons you will need to build a 45 man squad to allow a gameplan design that will overcome any team in the NFL. SuperBowl glory can be yours, then you can join the Bills (sorry again) or go on to build yet another squad, and take yet another SuperBowl. The team and coach of the nineties haven't yet been decided. Time to stake your claim?

GAMEBUSTERS

"Never in the field of human vegetables has so much been sold –" What? That isn't the cheat code to level 12 of {Insert Game Name Here}? I've got to do it the hard way? Lucky *FORMAT*'s featuring three complete solutions this issue!

WONDERLAND

The extremely wonderful Thushan Kumaraswamy of Cheshire (is that an anagram of something?) is this month's dosh winner. He's sent in a complete solution to *Wonderland*. As Thushan points out, although there is a built-in help facility it's by no means comprehensive, and anyway you lose points for it. So here we go with Alice's Guide to *Wonderland* in 89 Easy Steps...

1. E, get pears.
2. Wait (for the rabbit to appear).
3. Follow rabbit W, SW, W, W, S, S, S.
4. Get jar (as you fall down the hole).
5. Get off leaves and search them, get number 10 key.
6. W, open musical door, NW.
7. Get key in C, get sheet music (when one of the chairs is beside the piano).
8. SE, E, unlock door with key in C, open door, S.
9. Get card, shoe, overall and coat hanger.



● Step one: Always Take the Pear that Turns Into a Lantern. There's a particularly poignant story associated with that, but unfortunately we don't have the space to go into it here. Suffice to say you'd be shocked and dismayed if the full truth were ever revealed.

10. N, E, SE, get potion bottle, open curtain, look under table.
11. Get glass box, go to the music room, open piano.
12. Get on chair, open potion bottle, drink potion, get on piano.
13. Get key in G, get off piano, get off chair, go to long hall.
14. Wait (for the rabbit to appear), get blue fan and blue gloves.
15. Open fan, wave it, wear overall.
16. Wait (until rabbit appears again. He gives you a door key and opens the E exit).
17. E, get stick insect (don't worry if you fail), get stick.

18. N, W, get gardening gloves, E, S, S, get saucer and left pouch.
19. NW, E, SW.
20. S, S, W, W (you should see a puppy).
21. Throw stick (the puppy goes for the stick and brings back a silver key, but you can't get it yet).

22. Go to by the palace gates, E, open gate, N.
23. Untie washing line and get it, unlock front door with front door key.
24. Open front door, N, N, get egg, open back door, open cupboard, get cup, N, E, put hanger in vice, straighten hanger, open vice, go to the hall.
25. E, W, U, open clock, get card.
26. Put sheet music under bedroom door, put hanger in keyhole, pull sheet music, get sheet music and key.
27. Unlock bedroom door with bedroom key, open door, N, open chest of drawers, get pink gloves, get pink fan, get quartz bottle.
28. Go to in the woods, SE, SE, NE, SE, SE, S, N, NE, NW, SW, NW, NW, NE, get gardening fork, NE.
29. Examine washing line and get peg, N, open front door.



● Caterpillars: you

can't live with them and you can't live

without them. Oh hang on, yes you can. Well, you can't live with them, certainly. I mean, you'd keep treading on them all the time and the carpet would end up a complete mess. Yuck!

30. E, get gazettes, get card, get glasses case, E, W, U, E.
31. Look under bed, get slippers, remove shoes, wear slippers, W, S.
32. Wear gardening gloves, put peg on nose, E. (This is a good time to save the game.)
33. Pull rope, W, get carving knife. Do the next three commands in one line for safety: open cooling cupboard, get jug, close cupboard. Get glass key, E.
34. Pull rope, go to the dining room, unlock glass cabinet with glass key, open glass cabinet, get pass.
35. Go to outside a kitchen, SW, NW, W, SW, SW, SW, get card, W.
36. Don't bother with the puppy or the silver key.
37. E, NE, E, open hatch, U, get tub, open door.
38. E, get tea chest, S, SE, NW.
39. Drop fork, gazettes, egg, jar, potion bottle, fold napkin, get napkin.

40. E, get sack, W, open front door, S, W.
41. Go to the palace gates, N, N, put saucer in mist.
42. Go to the giant mushroom, give sherbet to caterpillar (and take note of the response).
43. Go to the horse chestnut tree, pour cream into saucer.
44. Go to the palace, N, show pass to guard, give pink gloves and pink fan to rabbit (when he appears).
45. W, get coat of arms and hook, drop coat of arms.
46. Open left door and right door, S, N, W, N, W.

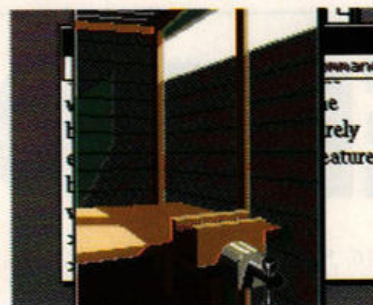
47. Ask chef about paper, get steak, give sugar to chef.
 48. Open tub, give tub to chef, give napkin to chef.
 49. SW, unlock cellar door with cellar key, NE, E, S, S, turn handle clockwise.
 50. Go to the wiggly-waggly path (beside the treacle well), attach winch handle to winch, get rope, tie rope to cup, drop rope, turn winch handle clockwise, turn winch handle anti-clockwise, get cup, untie cup, drop rope.
 51. Go to the palace kitchens, give treacle to chef.
 52. Go to the river (where the puppy is, but go through the woods, not through the river), give steak to puppy, get silver key.
 53. Go to the old tree, unlock silver door with silver key, open silver door.
 54. Go to the walnut tree, U, open tree house door, W, tie washing line to tree limb, D.
 55. Wear blue gloves, open sack, get hedgehog, put hedgehog in sack, close sack, put hook in hole, open trap door, drop washing line.
 56. D, N, get green bottle, get wedge, open cellar door.
 57. N, U, give green bottle to chef.
 58. Go to the eastern hall, U, E, open cabinet, get large lens, get nail varnish remover bottle, W, W, get card.
 59. Open queen-side drawer, get wooden key, E, U.
 60. Drop tea chest, stand on it, open



● By Step 35 you're wading about in rivers. At this point, incidentally, you could try typing in "Get Hieroglyphic Accommodation with Bejewelled Manoeuvring" - it doesn't actually do anything but it's a useful spelling exercise and helps take your mind off the fact that all this wading is getting your feet rather distressingly wet.

glasses case, get card, put small lens (from glasses case) into small end (of telescope), put large lens in large end.
 61. Point telescope SE, look through telescope, close left or right eye (depending on which eye is looking through the telescope, okay?), look through telescope. You should see a card in the tree house.
 62. Go to the walnut tree (the tree house), U, put arm in hole.
 63. Go to the giant mushroom, cut right side of mushroom with knife (do this twice), go to the mad tea party.
 64. Stand on table, eat chunk, get on teapot, eat chunk, get in teapot, say hello to dormouse, get card, get out of

teapot, get off teapot, wait (until you're normal size), get off table.
 65. Go to giant mushroom, cut left side of mushroom with knife.
 66. Go to throne room, stand on queen's throne, eat chunk, pull bell pull, S.
 67. Get card, get red key, S, N, N, E, open guard door, E.
 68. Unlock locker 10 with number 10 key, open locker 10, get number 3 key, unlock locker 3 with number 3 key, open locker 3, get number 7 key, get card, unlock locker 7 with number 7 key, open locker 7, get boots.
 69. Work your way back to the walnut tree, in the walled garden, by hand



● One of my many vices. The others are wasting caption space with terrible jokes and explanations of my other vices. Which brings me to my vices...

using the secret passage through the Palace kitchens and the cellar. This smuggles the boots out of the cellar past any guards. Drop boots (at the walnut tree), go to giant mushroom, cut right side of mushroom with knife.

70. Go to the path (where the red brick is), lever red brick with knife, try to get card (you should fail), go to the walled garden (the centre of it, down from the limb), get card, go to walnut tree (where the boots are), get boots.
 71. Go to the long hall, unlock the tiny door with key in G, open tiny door, eat chunk, W, SW, dip brush in paint (when you have got bigger).
 72. Remove slippers, wear boots, W, W, N, get card.
 73. N, unlock hedge door with wooden key, open hedge door.
 74. Drop boots, go to palace kitchens, give flour to chef.
 75. Get crystal key (repeat this command until you catch the key), E, unlock crystal chest with crystal key, open chest, get invitation.
 76. Go to the breakfast room, get egg.
 77. Go to rabbit's bedroom, open nail

varnish remover bottle, dip brush in nail varnish remover.

78. Dip brush in white fluid, paint egg.
 79. Go to elm tree, open quartz bottle, drink potion, put egg in mouth, wait, drop breakfast egg into nest, wait. Repeat nine times.
 80. Open glass box, eat cake, get flamingo, wait. Repeat three times.
 81. Make your way south of the duck pond, avoiding the pond itself, and keep trying to go SW until the guard lets you on the Croquet Green.
 82. (When you get onto the Croquet Green) open sack, get hedgehog, drop hedgehog, hit hedgehog with flamingo, SE, hit hedgehog with flamingo, get card. (Repeat hitting the hedgehog with the flamingo until the end of the game. This surreal little exercise means you eventually get back to the south of the duck pond.)
 83. Go to the eastern hall, close guard hall, lock guard door with red key.
 84. Go to breakfast room, get fork, go to back garden (in the rabbit's house), search compost with fork, get card. (This should give you the full suit of diamonds! The order, which is important



● Dormouse: small rodent found mainly in books by Lewis Carroll and fairy tales of all descriptions. Cunning PR work (by credulous animators such as one Walt Disney) has resulted in deceptive image of innocent cuteness. Lives on a diet of - erm, crawling things and the like. Commonly thought responsible for the death of Jimmy Hoffa and is known to be hiding Lord Lucan.

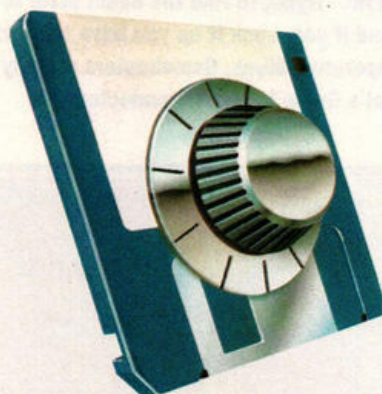
later on, is: 6, 2, J, Q, 4, 3, 10, K, 7, 9, 5, A, 8.)

85. Go to the palace driveway, open tailor's door, E, give tailor the suit.
 86. Get chef's overalls, go to palace kitchens.
 87. Unlock pantry door with pantry key, open door, NW, get tarts. (You get captured at this point but don't worry. Note the order of the diamonds on the list as he reads out the Roster. It should be the same as the order in which you collected the cards.) Wait.
 88. When asked for a card, make sure you give the name of a diamond that is higher in the order than the one who is accusing you. For example, if a four of diamonds is accusing you, you type "say six of diamonds." Repeat this for all the accusers you face.)
 89. And, um, that's about it. You've completed the dream. No problem at all, now was it?



● The Invisible Man entertains his old friend and colleague Count Dracula (who of course cannot be photographed).

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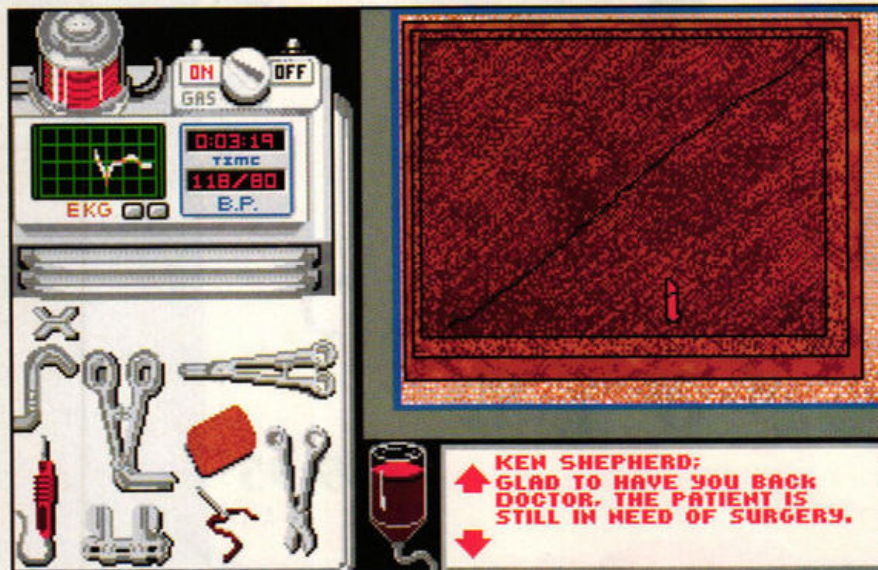
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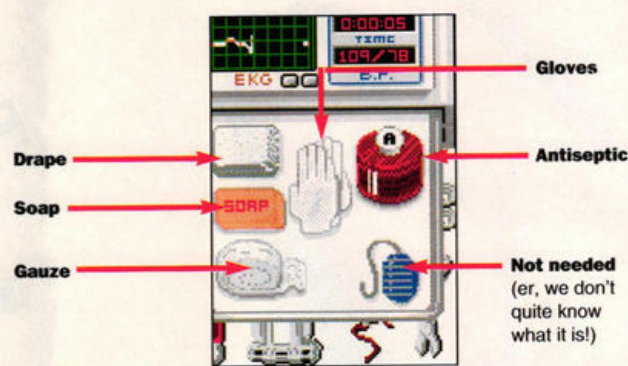
LIFE AND DEATH

Life & Death. It's a real pain! (Ho ho ho.) Trying to find the exact pixel to click on in an appendectomy isn't easy, and if you muck it up you have to start all over again. So to ease those post-operative blues, Gamebusters proudly and blatantly presents The Complete Fool's Guide to the Appendectomy!

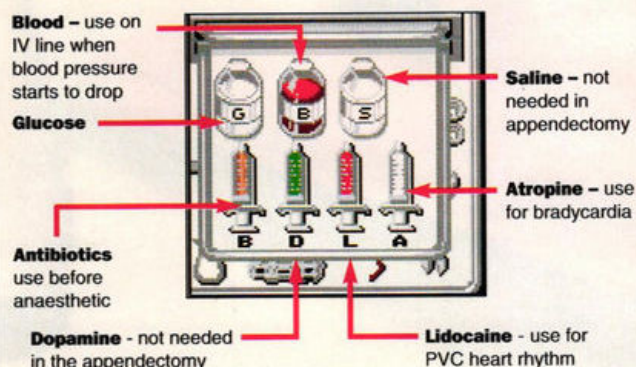


1. First things... er, first. Cleanliness is next to Editorliness, so wash your hands with the soap in the top drawer (see the panel to the right on this page), then put on your rubber gloves. Next, completely cover the exposed area with antiseptic, also in the top drawer.

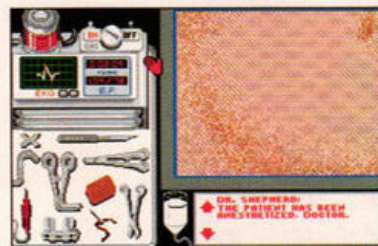
TOP DRAWER



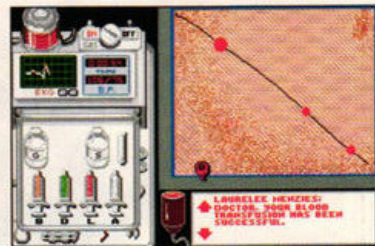
BOTTOM DRAWER



2. Good so far. The patient is shy, so drape the rest of his body. Try to leave as large a space as possible to work in, so click on the top left corner of the drape. This means only a thin line of drape shows around the area.



3. Before you put the patient under, say goodbye. No! Er - give him some antibiotics. These are in the bottom drawer, in the syringe marked B (obviously for "Biotics, anti, syringe full of, one"). Then turn on the anaesthetic.



4. Now comes the fun part. The first incision must be made from the top left of the area to the bottom right - using the scalpel, naturally. Beware! As soon as you start cutting, you get a message from one of the other surgeons warning you that the patient's blood pressure is dropping. Don't stop cutting...



5. ...until you reach the bottom right, then immediately put the blood bottle on the IV line. If you stop halfway through cutting to put the blood on and come back later you fail the operation. The incision will bleed! Clamp each of the bleeders off and cauterize them, until you get told that they're all done.



6. Right, remove all the clamps. Don't bother about swabbing the blood - it's not necessary. Get out yer retractors and pull that skin back - just click anywhere on the area with them. Now repeat this procedure for the next two layers - the second doesn't bleed because it's muscle. Be sure not to incise anywhere outside the currently-exposed layer, or you fail.



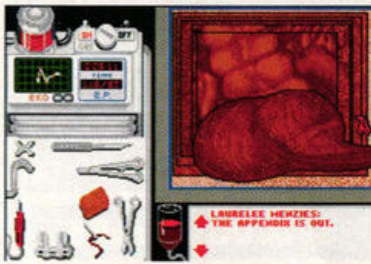
7. The next layer is the transverse muscle layer and should be incised the opposite way - from upper right to lower left. Retract this layer and you're through to the peritoneum. This should be incised differently. Make a small nick with the scalpel at the top left by clicking twice. A hole appears. Now use the scissors to cut from top left to bottom right, and retract the layer.



8. The coloured dots are meant to be peritoneal fluid. Take a sample using the test tube from the bottom drawer (far right). Click with it on the fluid, which now needs to be removed with the suction tool - again just click on it.



9. Now we're getting there. Click on the intestines and the cecum (caecum, if Americans could spell; Secombe if it presented Highway) pops out. To stop it flopping back in you need to pack it with gauze, which as you recall is in the top drawer - pick it up and click with it on the cecum.



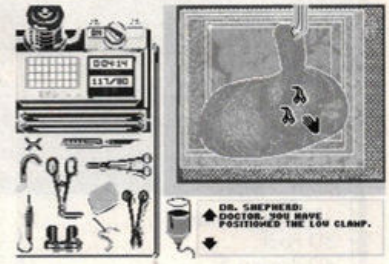
10. Click two more times on the cecum and the appendix should be exposed. Pick up the clamps and click precisely where the arrow indicates.



11. This is the first really tricky part. You need to sever the mesoappendix membrane. Pick up the scalpel and click with it *exactly* where the hole is on the screenshot – a few pixels out either way and you kill the patient immediately. (Now you know why they say surgeons need steady hands!)



12. Now close the incision by picking up the suture (needle and thread to you, madam) and clicking it directly on the hole. Only one is needed.



13. The artery must be removed. Pick up the scalpel and click *once* with it precisely where it is on the screenshot. You'll know if you get it right. Before you remove the appendix it has to be clamped in two places. Take a clamp and click with it about half way up the appendix – see the screenshot. If you're told this is the high clamp, take another and click with it slightly below the first.



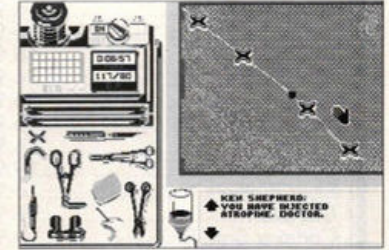
14. Now comes another difficult part. You must click with the scalpel *exactly* on the point indicated on the screenshot – again, once is enough. This is a crucial point, very easy to get wrong. Get it right and the appendix disappears and you're over the worst part. Click empty-handed on the cecum to invert it and expose it for suturing. Take the suture and click once on the round stump.



15. Click on the cecum to put it back in, and use the right mouse button with the retractors to close up the peritoneum. Then use the sutures to sew up the incisions. Try to place them as closely as possible on the incision, spaced as in the screenshot. If you do put one a little out of line, it's best to leave it rather than trying to cut it with the scissors. One out of line can't hurt!



16. Repeat the closing/suturing procedure until you get back to the skin layer. Here you need to use skin clips – about four should do. The only thing left to do is mumble a quick prayer and turn off the anaesthetic. If everything's well you get a message from the other doctors and the head chappie appears with this message. Great!



Now all you have to do is master the aneurysm graft... Remember, throughout all of this you need to be prepared for the patient to develop bradycardia or PVC heart rhythm and use the appropriate drug (as indicated by the labels on the screenshot) and remember to do it quickly!

KING'S QUEST 4

Paul Borgerson of Southport has sent in solutions to many, many adventure games. We've chosen *King's Quest 4*, since this was the most recent and we've covered a lot of the others in past issues.

First let me say that this is probably the shortest route. Use this and you don't see all the pictures of the game. So try some different directions to see what happens!

We start on a beach in the land of Tamir.

E, N, E, look under bridge, get gold ball. E, open door, clean house (enjoy watching), get pouch of diamonds, leave house.

S, enter mine, E, give pouch, W, leave mine.

E, look at this location for a bird which is picking up a worm (if there isn't any worm go to another location, east or west, to find a worm), get worm.

E, E, allow yourself to be taken away, wait for henchmen to return in cell. N, N, W, open door. W, look at books inside the right shelf, get book, look at picture, walk to left wall, look at

wall, walk to left shelf, pull latch. W, get shovel.

E, E, S, W, W, walk to right side of pond, drop gold ball, catch frog, kiss frog, get gold ball. W, W, N, W. (Wait until the fisherman is gone.) E, open door, offer pouch to fisherman, leave house. W, walk to end of pier, bait hook with worm, start fishing. (Repeat this until you catch a fish.)

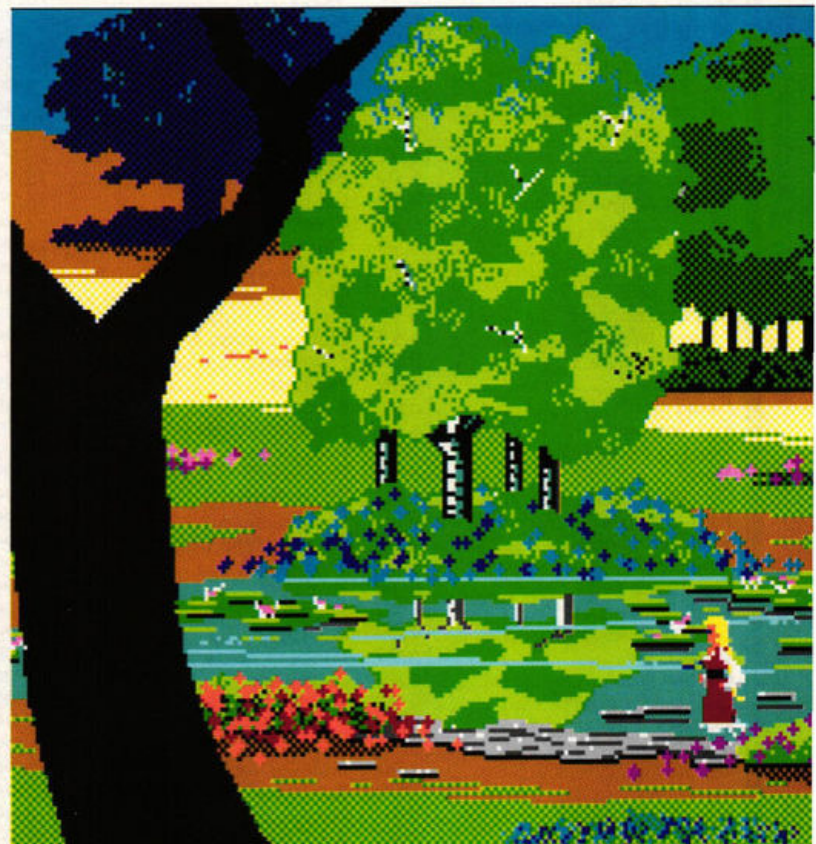
E, E, E, N. Wait until Cupid arrives, get bow.

W, S. Wait here until man arrives, give book to man, get lute.

N, N. Wait here until Pan arrives, play lute, give lute to Pan.

W, S, W. (Back on the pier; let's have an inventory check. You should have: silver flute, lantern, gold ball, small crown, bow, shovel, fishing pole, dead fish!) Now enter the water (but save game first – a shark may appear!).

W, W (on island), here look around for a peacock feather, get feather. (You can also go to Genesta to see how sick she is, but it's not necessary for the game!) better save game when leaving the island again.



● Er – whoops. Probably not the best place to start searching for – um, whatever it is you're searching for, unless you're one of those get-in-there-and-delve-about type of adventurers to whom a pond means a challenge rather than a wet bottom

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E. (If there isn't a whale then go back and try again until you are absorbed by a whale!) Once inside whale, get bottle, open bottle, read note. (Nice joke.)

(Now this is very strange – so read this first and then try it out.) You have to tickle the whale with your feather but you can do this only from a high vantage point. Go to the right side of the screen (don't try the middle of the screen – you'll fall down). Walk up and to the right. If you are high enough you can tickle the whale and end up being back in the sea!

Swim north to another island, walk near pelican, throw fish to pelican, get whistle, walk to wreck on right, look inside wreck (you get the bridle for the unicorn), blow whistle, ride dolphin.

E, E, N. Walk around here until unicorn arrives, shoot bow, walk to head of unicorn, put bridle on unicorn, ride unicorn, wait...

(Back from the castle again.) N, walk near waterfall (don't walk in water!), wear crown (go inside waterfall), get board, light lantern. (Save game!)

E. (If a troll appears then simply walk back from cave and try again.) Get bones (near the cave entrance).

S, E, E. (Save game! – there is a chasm in the darkness.) Walk near chasm, put board on chasm, walk over chasm.

N, E (at a pond), walk to green plants (not into the swamp!), jump, jump, jump, until you reach the island. The last plant is too far away to jump over. Put board on water, walk over board to island, play flute (until the snake is mesmerised), go tree, get fruit (better save again), walk over board again, get board, jump (until you reach the cave entrance again!), walk through hole. S, walk near chasm, put board on chasm, walk over board. (Save game!)

W (keep your eye out for the troll), N, W, W, turn off lantern, go to water (outside waterfall). W, S, W, S. If the ogre or his wife appears then go north and south again fast until they are

gone. Open door. A dog runs towards you. Give bone to dog, go upstairs, get axe, go downstairs, go to closed door, open door, look keyhole. Wait until you hear ogre coming, look keyhole again, (watch,) open door, walk to hen, get hen, walk to door, open door, leave house.

N, E, E. Go to Lolotte's castle again and see what is going on. Return; N, N, N, use axe (the trees are no longer dangerous).

N, E (inside cave). Here: walk around pod and walk in between the two witches standing at the wall, take eye, leave cave, enter cave again, take scarab, give eye; don't waste time, leave.

S. It is now night in Tamir. S. Zombies appear – but you have a scarab, so they go away.

W, enter house again. (The whole house seems to be alive!) You hear the cries of a baby. Up, go left door.

W, walk to cradle, take a look inside the cradle.

E, S, down, S, W (cemetery). Warning! Save Game! You have to dig five times with the shovel; if you try it once too many then the shovel breaks. You have to know the correct graves. If you find nothing in a grave after digging, then restore your saved game. I cannot tell you the grave where you have to dig. You must read the tombstones and write down what they say. Walk to the smallest grave (it's on the left side on the tree in the third row – try it by reading the tombstone), dig. You should get a baby's rattle. If not, then this was the wrong grave! Restore Game and try again.

E, enter house, walk to baby cradle, put rattle into cradle. Now you hear

With the return of his long-lost son, Alexander, and the rescue of his daughter, Rosella, from the terrible dragon, old King Graham decides it's time to pass on his adventurer's hat to younger blood.



● "Oi! Tradesmen and princesses on a quest to find the magic talisman to save the good fairy Genesta whilst also searching out the charmed fruit to save their dying father, round the back!"

things in the lower floor and the second ghost appears. Walk downstairs, look ghost. You get information which you need. Leave house again.

W, dig, get coins.

E, enter house, wait until ghost appears, give coins. You hear something in the upper floor – third ghost. Up, go right door, look woman.

S, down, S, E. Save, then dig, take locket.

W, open door, up, go right door, give locket to woman. You hear something downstairs.

S, down, W, look ghost – Good heavens! It's Lord xxx!

E, S, W, dig, get medal.

E, open door, wait until ghost appears, give medal to ghost. Now, a little boy appears, the fifth and last ghost. Upstairs, go right door (the trap door is open now), climb ladder, look ghost, climb down ladder.

S, downstairs, S, E, dig, get horse. W, open door, up, right door, climb

ladder, give horse to ghost, open chest, look inside chest, get paper sheets, climb down.

S, downstairs, W, W. (Better save game somewhere around here!) Up, up, sit down organ, play sheet music, get skeleton key, stand up, better save again, walk down, down.

E, E, S, E, unlock door, open door, get rope, climb down rope. Mummy appears, but don't worry. Get Pandora's box, climb up rope.

W, S, E. Back in the castle, see what happens... Now in Edgar's room... wait until Edgar comes. Walk door, get rose, look rose, unlock door, open door (better save), walk downstairs.

E, walk to the door near the henchman. Warning: if you come too near to the henchman, then you will be married to Edgar and all is over!

If you manage to avoid that awful fate: in the kitchen walk to the right cupboard, open cupboard, get possessions.

W – walk upper doorway east.

E, E (better save), up stairs. Don't look in the west location; if you do, it's a sure thing the henchmen will catch you. Up stairs (Lolotte's room), unlock door with gold key, open door, walk to the right side of Lolotte's bed, shoot bow, get talisman.

Down stairs, now you can go west, open door, get hen, get Pandora's box.

S, E (better save), go downstairs.

W, S, W, inside stable, open gate. Walk near the gate from the left side looking to the right gate, open gate.

S, down path (use your mouse!).

W, W, W, W, W, N, N, W. (Better save once more.)

W, W (island of Genesta again). Go inside Genesta's castle, walk near bed and – finally! – give talisman to Genesta. You've done it! Now all you have to do is sit back and enjoy the last sequence of the game! **stf**

AND FINALLY, MARMADUKE...

And finally, Hermione, a few shorter tipettes. Normal service will be resumed next issue!

ATOMINO Psygnosis

Never mind all this complete solution walk-through business. Try these Level codes from Mark Wheeldin of Bolton:

10: ACID
20: ARROW
30: EMISSION
40: LAVA
50: CAVE
60: ELIXIR
70: BONE
80: WOOD
90: FOUNTAIN
100 GETWISE

CONQUEROR Rainbow Arts

Nick Worthington of Cheshire has found an "undocumented feature" (titter titter) in this getting-on-a-bit strategy shoot-'em-up. Select a strategy game at level 9. Choose a side, pick one of the cheapest tanks, start the game and get knocked out. Even though you are dead a bug gives you the bonus points for that level (about 40,000) and a chance to play that level again, naturally with better tanks bought with the extra credits.

SUPERCARS 2 Gremlin

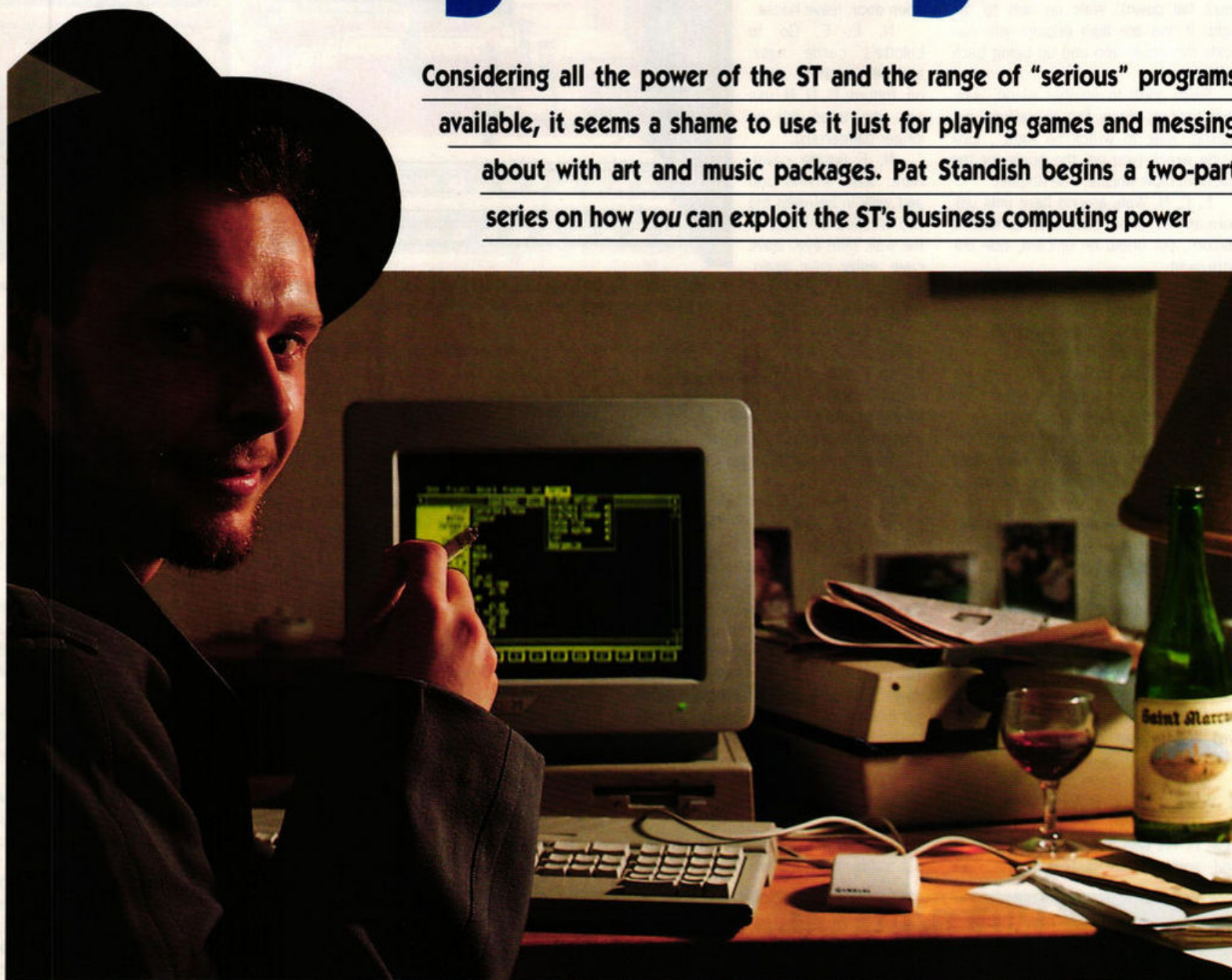
On page 88, we spilled the beans on the cheaper but almost identical prequel to this racer. However, if you've got this one: when on the options page delete the names of players one and two. Then type in these names instead: "I Walk the Hill" for player one and "Inwards" for player two. Now you have 99 of each weapon as well as grade three armour, engine and battering ram. You also qualify in every race.

Z-OUT Rainbow Arts

Jon Paul Witt of Merseyside has completed this game and thus learned these cheats, because apparently they're given to you on completion. Seems a little bit pointless then, dunnit? Anyway, for the rest of us: pressing Q and K together gives you unlimited energy, pressing Q and keys 1-6 gives you access to levels 1-6 respectively, and pressing Q and 7 takes you to the end of the game.

Everybody's

Considering all the power of the ST and the range of "serious" programs available, it seems a shame to use it just for playing games and messing about with art and music packages. Pat Standish begins a two-part series on how you can exploit the ST's business computing power



Business doesn't necessarily mean boring – in fact, playing with "serious" software can open up a whole new world, and you don't need to be a budding entrepreneur to take advantage of the range of packages around. Like any other programs, after all, they are tools designed to make complex or repetitive tasks easier, and you can use them anywhere those tasks are relevant. At the same time, learn to use databases and spreadsheets for hobby purposes and you're likely to find you have an excellent grounding for future employment. You might even find ways to use your ST as a tool for part-time business ventures and so make enough money to cover the cost of all those add-ons and upgrades you've been promising yourself for ages.

Programs intended for business can be pretty daunting to use at first, but once you understand the

principles involved and what you can use them for, they soon lose their mystique and become no more frightening than games. One of the most off-putting things in getting to grips with a new topic is the jargon. It often sounds like a foreign language but is really no more complicated than the terms you already know – like RAM, floppy, mouse and so on. The Jargon Busters boxes in this article should set you on the road to understanding the world of business software. And don't worry – every expert was a beginner at first.

WORD PROCESSORS

The word processor is usually the first business program to be considered by any computer user. At its simplest it is merely a typewriter which, instead of printing characters as you type them, holds the text in

memory. This enables you to correct any spelling errors or typos before committing the words to paper. It also enables copies of the text to be stored on disk for future reference.

"Ah, but," we hear you say, "I haven't got a printer so a word processor is no use to me." Don't you

You don't need a printer to use a WP – many journalists use a modem and never see their words on paper till the magazine is printed

business

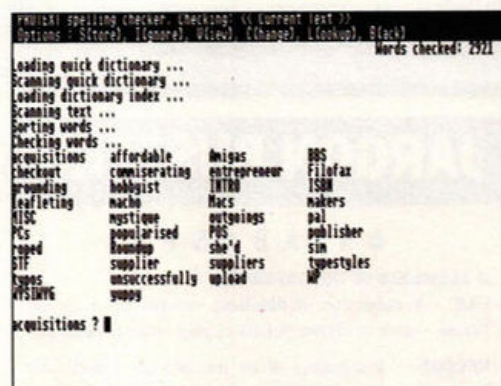
believe it! Text produced on a word processor can be used in all sorts of ways without ever getting a sniff at a printer. What about sending letters to your friends? If they have computers with which your ST can exchange disks – the ST can read PC-format disks, and so can Macs and Commodore Amiga games machines, as well as PCs – you can simply type your letter, save it and post the disk. At the other end your friends simply load your disk to read your missives.

Then again, perhaps you use a modem and wish to send a message down the telephone line to a Bulletin Board (BBS) or conference. Time spent on-line

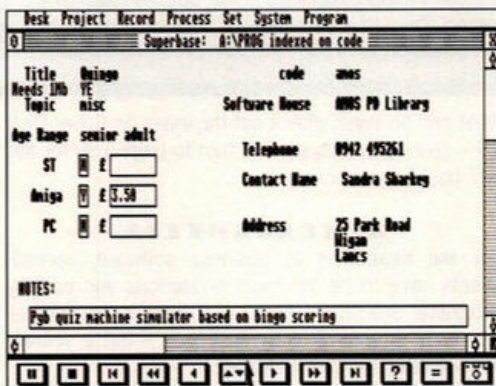
is expensive, so it's an advantage to be able to type up your message beforehand and then simply upload it. Many journalists use this system to send text to magazines – their words might never see paper at all until the magazine is finally printed.

DATABASES

Databases are used to organise information – anything from Christmas card lists and telephone numbers to details of video or book collections. Although they seem complex at first they are really only the electronic equivalent of a filing cabinet or card →



● Protex, the word processor we use at ST FORMAT, in its spell checking mode. The dictionary doesn't know these words – yet! (Fancy not knowing "STF"?)



● Forms set up with the versatile database Superbase can show data from two files at once – here both the games and the suppliers details...

JARGON BUSTERS

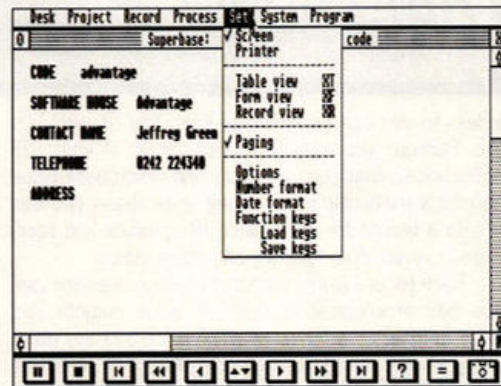
WORD PROCESSORS

ASCII (American Standard Code for Information Interchange) – Each word processor has its own system for storing text which is rarely recognised by others. ASCII is a standard system which virtually every word processor understands.

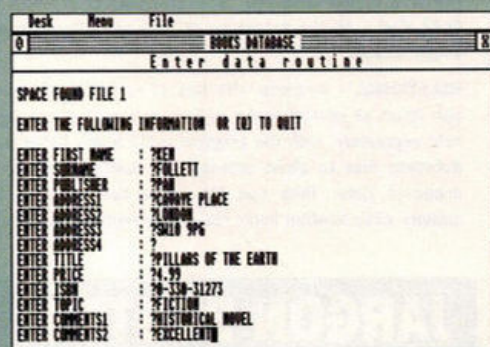
FONTS – Different typesets such as Times, Helvetica and so on. Many word processors support several fonts, as do printers.

MAIL-MERGE – A system of grabbing names and addresses from a database and inserting them in standard letters (like the "Dear PAT STANDISH, Congratulations! You have been chosen to represent WIGAN in our great prize draw...").

WYSIWYG (What You See Is What You Get) – A system whereby text is displayed on the screen exactly as it will appear when printed out. WYSIWYG word processors tend to be slow updating the screen.



● And here simply the supplier. This "relational" facility – the ability to call on related data in different files – saves having to enter duplicate data.



● Entering all the details all the time can be a tedious, time-consuming pain. A relational database is easier...

THE BOOK COLLECTOR

Richard Moss is an avid collector of books. In order to keep his massive collection in a manageable state – and keep the details handy for insurance purposes – he uses a database to record all his acquisitions. Each record in the database holds details of a single book

together with the author, publisher and ISBN code (the unique number for every book published).

At the moment he uses a flat-file database but is thinking of moving up to a relational database (see Jargon Busters box). As he puts it: "Some of my favourite authors have over a dozen books to their name. I'm getting fed up having to type all the authors' details in again every time they bring out another. With a relational database I can simply enter a short code for the author for each new release."

Does Richard plan to enter all his current books again? Not a pleasant task. "No need. My current database can organise the data so that it can be saved out as ASCII text to disk. Then all I need to do is load it into the new program. I might have to fiddle a bit to make the programs match, but using a word processor it should only take an evening or two."





LOCAL FOOTBALL LEAGUE ORGANISER

Mandy Allen wished she'd kept her mouth shut about owning an ST when she was roped in by her boyfriend to keep track of the local amateur football league. While commiserating, we asked how she had approached the task.

"The first thing I needed was a database to store details of all the different teams, contact numbers,

addresses and so on. Then there was a word processor with mail-merge facilities to send form letters to all the clubs.

"The hardest part was organising results and working out an updated league table after every match. A spreadsheet turned out to be the easiest program for that, and since I needed a database too I chose a program which incorporated both. As the result cards come in, I feed the new details into the spreadsheet, then use the recalculation facility to add them to the cumulative totals from previous matches. Then it's simply a matter of sorting the clubs into order according to their points totals and printing out the results.

"I also use the database facilities to

keep track of my boyfriend's club - names and addresses of players and so on, and whether they're behind with their subs.

"Finally, with the word processor's mail-merge facilities I've also been able to begin setting up begging letters to local businesses asking for sponsorship."

Desk VIP Worksheet Range Copy Move File Print Graph Data Quit

FOOTBALL					
	FOR	AGAINST	POINTS		
1					
2					
3	Shags Head	0	0	3	
4	Knocky Duck	0	0	3	
5	Scricket Club	0	0	3	
6	6st Peters	0	0	3	
7	7st Pauls	0	0	3	
8	8town Youth	0	0	3	
9	9bowling Club	0	0	3	
10	10colts	0	0	3	
11	11miners	0	0	3	
12	12cross keys	0	0	3	
13					

OK Cancel Calc Edit Graph READY

● Once the results for all the matches are entered, the database option "sort" shows the state of play.

index, so you can use them to keep any records you like. Perhaps you want to record details of your STF collection so that you can easily find which back issue carried a particular topic. Using a database you can create a record for each piece of software and hardware covered, plus tutorials and other topics.

Each record would consist of brief entries for various bits of information such as issue number and page, perhaps the STF rating and price and any other info you want for quick reference. Having typed all the data in you can then search through the database to find, say, all the flight sim reviews or RAM upgrade articles simply by asking the database to retrieve the items of interest. Once all the slog of entering the data is done, finding what you want is far quicker than ploughing through piles of glossy magazines. To see

To the newcomer, spreadsheets seem mysterious and baffling – but you can think of them as pads of paper with built-in calculators

Worksheet Range Copy-Move File Print Graph Data Macro Quit

SPREAD1-A					
	JAN	FEB	MAR		
1					
2	Brought Forward	100			
3	INCOME				
4	Salary	1000	1000	1500	
5	Other	200	200		
6	SUB TOTAL				
7					
8	EXPENDITURE				
9	Mortgage	300	300	350	
10	Fuel	80	50	90	
11	Food	200	150	250	
12	Other	250	100	500	
13	SUB TOTAL				
14	Carried Forward				

● Spreadsheets can be very daunting to the inexperienced user, but LDW Power is simple to use – and very powerful. Here we have the beginnings of...

what can be done, check out the index on Cover Disk 19 – and if you missed that, turn to page 136 for the STF back issue service.

SPREADSHEETS

For the newcomer to business software, spreadsheets have to be the most mysterious and baffling programs around. At first sight there is no obvious use for a screen divided into boxes – but a second look makes things a lot clearer.

The simplest use of a spreadsheet is to work out budgets (or cash-flow forecasts). Imagine you want to buy a new car and therefore need a bank loan. The bank manager is going to need convincing that you are able to afford the loan repayments, and here's where a spreadsheet comes in handy. By constructing a table of income and outgoings over the proposed period of the loan, you can easily see whether the repayments are likely to push you into the red. The big advantage of spreadsheets is when you want to change the figures: adjust the repayment level and a good spreadsheet automatically recalculates your budget to arrive at an affordable figure.

Students off to college can also use a spreadsheet to help plan the use of their grants. Before you buzz off to the Union for a pint, use a spreadsheet to check that you'll be able to eat and pay your

Worksheet Range Copy-Move File Print Graph Data Macro Quit

SPREAD1-A					
	JAN	FEB	MAR		
1					
2	Brought Forward	100.00	470.00	1070.00	
3	INCOME				
4	Salary	1000.00	1000.00	1500.00	
5	Other	200.00	200.00		
6	SUB TOTAL	1300.00	1670.00	2570.00	
7					
8	EXPENDITURE				
9	Mortgage	300.00	300.00	350.00	
10	Fuel	80.00	50.00	90.00	
11	Food	200.00	150.00	250.00	
12	Other	250.00	100.00	500.00	
13	SUB TOTAL	830.00	600.00	1190.00	
14	Carried Forward	470.00	1070.00	1000.00	

● A forecast – which is really just a calculation like any you might do on your own calculator. Totals, sub-totals and forward cells hold the formulae required.

JARGON BUSTERS

DATABASES

● ELEMENTS IN THE DATABASE:

FILE – A collection of database records on a similar theme – such as all the details of your video collection.

RECORD – A summary of all the info on a particular item, such as name, address and telephone number.

FIELD – Individual items of information which are collected together to form a record such as the name, publisher, price or rating of a specific game.

● WAYS OF ORGANISING YOUR DATABASE:

FLAT FILE – All the details on an item are entered in a single record.

RELATIONAL – Records with lots of common information (such as several books by the same author) can be held separately, with the program using a link between database files to avoid entering and holding reams of duplicate data. Thus one file might hold details of authors while another holds records for individual books.

JARGON BUSTERS

SPREADSHEETS

CELL – The box formed where a row and column cross. Values entered can range from text to figures with the option to enter a formula instead.

COLUMN – A vertical set of cells.

ROW – A horizontal set of cells.

FORMULA – Algebraic expressions using the contents of other cells as values to save having to perform the same calculation (or similar ones) over and over again.

RECALCULATE – After you change the value held in one or more cells, "recalculate" is used to force the program to go through all the formulae affected and change the resulting figures.

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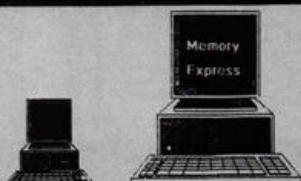
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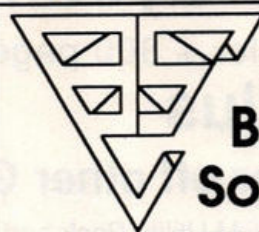
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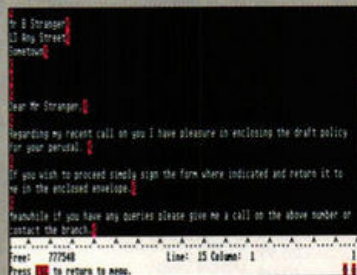
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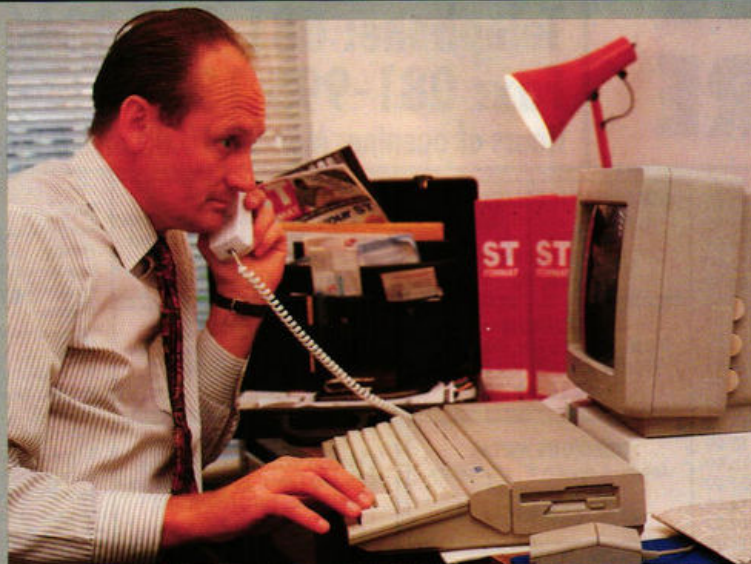


OFFICE SERVICES FROM HOME

When Dave Lincoln lost his job he was tempted to sell his ST to raise some cash. So why didn't he? "I reckoned I could probably sell the system for £200-£300 but it was the beginning of summer and nobody was interested. Then by chance I



● Even inexpensive Public Domain programs like *ST Writer* are capable of producing top-quality results with a decent printer. Why pay more if all you need is the basics?



spoke to a local insurance salesman who happened to need letters sent to his clients.

"I offered to do it for him, so we set up a group of standard letters covering various stages of the job. Then all he needed to do was ring through with names and addresses and the number of the letter he wanted sent. Occasionally

he asked me to type other things for him – suggestions for the management and so on. For this he paid me around a pound a page.

"That doesn't sound much – not just for one person. But he recommended me to some of his colleagues, so I soon found I was working for half a dozen of them. At the same time I put an ad in the

local paper offering typing services. Although response was slow at first I now find there's quite a demand. Most of the time I find myself typing up manuscripts for aspiring writers or essays for students. It's hard work, but people who use me tend to recommend me to others, so now there's a steady flow of jobs."

Has Dave any ideas for expansion? "I'm considering setting up with some DTP (desktop publishing) software and using it to design and produce leaflets for local businesses. Because I work from home I don't have many overheads, so I can offer an inexpensive service. I'm also experimenting with a database and planning to have local shopkeepers survey their customers to see which goods and services the punters want.

What about getting a "real" job? "No way! There's plenty of demand for my services and I can choose my own hours. It's a pain dealing with tax and stuff, but I've just engaged an accountant to take care of that so I can concentrate on making money and enjoying my ST at the same time. And to think I almost sold the machine!"

rent for the rest of the term. There are many other uses for spreadsheets – in fact, full blown database and accounting systems can be constructed with practice. Think of them as pads of paper with built-in calculators. Their open structure means you can perform just about any task which comes to hand. All you need is a little imagination and some practice.

MISCELLANEOUS UTILITIES

In addition to word processors, databases and spreadsheets, there are heaps of more specialised utilities around which can make life easier. Where the main programs available in each of these categories

More specialised utilities can make life easier – from label makers and disk-based diaries to complete home accounts programs

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23/04/90	Shopping	39.1	288.21
25/04/90	Car repairs	210.0	78.21
30/04/90	Pay		1278.21
30/04/90	Shopping	52.33	1225.88
04/05/90	Savings	288.88	1825.88
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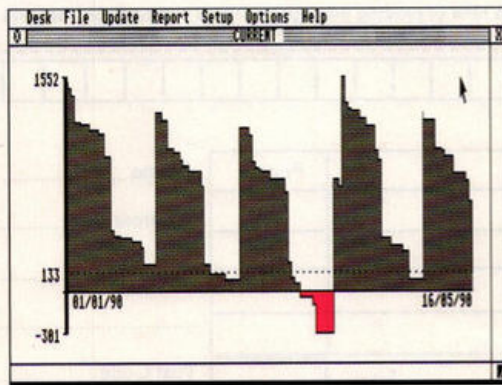
● Among the specialised utilities available for your ST is *Personal Finance Manager*, which helps keep track of your money. I wish I were paid that much!

are deliberately open-ended, enabling you to tailor them to your own needs, other programs (in the Public Domain in particular) may be based on a word processor, database or spreadsheet but pre-configured to perform a specific task.

A good example is the range of label makers, derived from word processors and databases but set up with the correct margins and printing instructions so that you can create and print out labels to your own design. How about tidying up your disk collection with easy to recognise labels for each category? Or what about neat printed labels for your videos? Much nicer than scribbled notes on a sticker.

Perhaps you need to organise your time more effectively. If so, have a look at some of the computerised diaries around. These handy utilities can jog your memory about forthcoming events as well as things you have forgotten to do. (One was yours free on Cover Disk 25!) Some programs even enable you to print out sheets to fit personal organisers.

If you have a bank account or a handful of credit cards it's worth looking at a home accounts program. Performing the tasks of both database and spreadsheet, these programs help you keep track of your



● Among the helpful options is one that enables you to graph the state of your bank balance. Oops! Seems to have been a bit of a problem in March...

JARGON BUSTERS

MISCELLANEOUS

PERSONAL ORGANISER – The standard yuppie accessory some years ago, as popularised by Filofax.

PRE-CONFIGURED – A basic program enables many settings to be made to suit your needs. When pre-configured – either by you when you first use the program or ready supplied by the programmer – the settings are ready-made for a particular task.

RECONCILIATION – Matching cheques according to cheque stubs with entries on your bank statement to arrive at the actual state of your account instead of the balance given on the statement.

money – and in the case of credit cards, work out the best time for repayment to avoid charges. Many such programs give plenty of help with reconciliation too, enabling you to mark cheques as cleared and automatically including standing orders month by month. Most also enable you to perform some budgeting work, and some even offer pretty graphs to show just how you managed to go into the red yet again.

Get started and you're bound to discover how useful "serious" software can be. It all just goes to prove that your ST really is the business! **stf**

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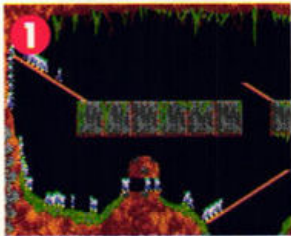
NEXT ISSUE

In part two next month, we lift the lid on the range of business software available for the ST and show you exactly which packages can do what you want. The possibilities are dazzling! You can't afford to miss *ST FORMAT* 28, on sale Thursday 10 October. To make sure of your copy, turn to page 136 for details of how to subscribe.

www.stformat.com

Games to last 1,000 years

Programming team Millennium reveal the top ten games they play themselves – when they're not hard at work producing hits like *James Pond*, the *FORMAT* Gold winning *Resolution 101* and the forthcoming *Robin Hood*.



LEMMINGS

Released June 1991

£25.99

STF 24: 94%

Psygnosis ☎ 051 709 5755

The sprites are hardly large enough to see, but *Lemmings* has given the word addictive a whole new meaning and taken the game world by storm. It's a puzzler, a platform game and great fun, especially at first. Original and neat.



POPULOUS

Released April 1989

£24.99

ST Amiga Format 10: 92%

Electronic Arts ☎ 0753 49442

Original and brilliant, this god-game is among nearly everyone's favourites, though at its best with two players. Now bundled with *Sim City*, *Populous* is available at a budget price for everyone who hasn't yet experienced it.



RICK DANGEROUS 2

Released September 1990

£24.99

STF 15: 86%

MicroProse ☎ 0666 504326

Our kind of platform game! Extremely difficult, but this just makes it even more addictive. The control method is brilliantly conceived, and beautifully clean samples and humorous characters help to make *Rick* a winner.



JAMES POND

Released November 1990

£24.99

STF 17: 81%

Millennium ☎ 0223 421526

Okay, it's one of Millennium's own – but with its comical graphics, hidden rooms and weird creatures, an all-round fun game. It's even got one of those annoying ghostie things which follows you wherever you go, just like the cheeky chappie in *Flood*.



SILENT SERVICE

Released July 1989

£24.99

STF rating: 79%

MicroProse ☎ 0666 504326

One of the older submarine sims, but still one of the best. Great atmosphere, with just the right mix of sinking ships and tension. But sometimes you do wish you could just do a quick 180 degree turn and unleash 27 torpedoes!



SWIV

Released April 1991

£24.99

STF 22: 78%

Virgin ☎ 071 727 8070

Our favourite shoot-'em-up of all time. Fast graphics and aliens a bit more intelligent than your average Venusian – these guys take it easier if you're not doing so well. Our top score so far is 92% but we'll have it sussed soon.



ELITE

Released November 1989

£24.99

STF 5: 75%

Rainbird ☎ 0666 504326

Elite is one of the classic games which has evolved with the home micro, but the team still prefer the 8-bit versions. If there was ever a game which produced a million and one clones, then this outer space arcade/strategy game is it.



DEFENDER OF THE CROWN

Released June 1987

£24.99

STF rating 67%

Mirrorsoft ☎ 071 928 1454

Particularly noted for its excellent presentation, *Defender of the Crown* is a strategy game based on old England. One of the very first games ever to come out on the ST, but graphically brilliant at the time and still very playable.



SUPER HANG-ON

Released November 1989

£24.99

ST Amiga Format 5: 65%

Activision ☎ 010 33 1 49 10 9995

A simple and superfast racing sim – but it's the simplicity which enables it to look so remarkably smooth at speed. Found in most game-players' collections – partly because it was bundled with the ST Power Pack for so long.



CHUCK ROCK

Released May 1991

£25.54

STF 23: 82%

Core Design ☎ 0332 297797

Another platform game with a twist. This one has everything: a touch of humour, colourful graphics and terrific animation as you belly-bump your way through the nasties – even cavemen with laser pistols. It certainly has that one-more-go appeal.

Honourable mentions: *Tetris*, *Bubble Bobble* (for two players), *Sim City*, *Doomdark's Revenge*, *F-16 Falcon*, *Robin Hood* (which actually isn't even out yet...)

TEN GAMES THAT WON'T LAST A THOUSAND SECONDS

1 99% OF LICENSED GAMES (FILM OR COIN-OP CONVERSIONS)

Released too often!

It's almost impossible to convert a 50MByte arcade game with 16 million colours onto an ST. Most lose their original playability.

2 DRAGON'S LAIR

ReadySoft

June 1990 £44.95 STF 12: 43%
This visually impressive platformer is simply a matter of making about three joystick moves at the right moment. Nice graphics, shame about the non-existent gameplay.

3 OUTRUN

August 1989 £19.99 STAmiga1: 71%

This couldn't capture the amazing graphics and feel that made the arcade game special.

4 POWERMONGER

Electronic Arts

January 1991 £29.99 STF 19: 93%
Play a god controlling your people's development. Too complex and unplayable with two.

5 LORDS OF THE RISING SUN

Mirrorsoft

March 1989 £29.99 STF: 24%
Despite pretty visuals this adventure/RPG

US Gold

game is let down by too many disk accesses.

6 SKIDOO

Tomahawk

January 1990 £19.99 STF: 15%
A Jet-ski game with all the realism of a day in a microwave meal. Dire gameplay and graphics.

7 EMLYN HUGHES SOCCER

Audiogenic

May 1990 £19.99 STF 11: 75%
This soccer sim is cluttered with tedious "management" options and gameplay is sluggish.

8 DICK TRACY

Titus

February 1991 £24.95 STF 20: 25%

This jerky beat-'em-up gives new meaning to the word abysmal. Gameplay is the pits.

9 DAYS OF THUNDER

Mindscape

October 1990 £24.99 STF 16: 88%
In this Tom Cruise racing game it takes forever to get anywhere, and there's only one track.

10 There are loads more bad games than brilliant ones – but it's a shame to get bogged down in debating them, especially since most of them probably started out as good ideas and somehow went horribly wrong.

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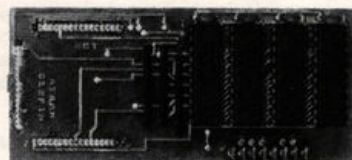
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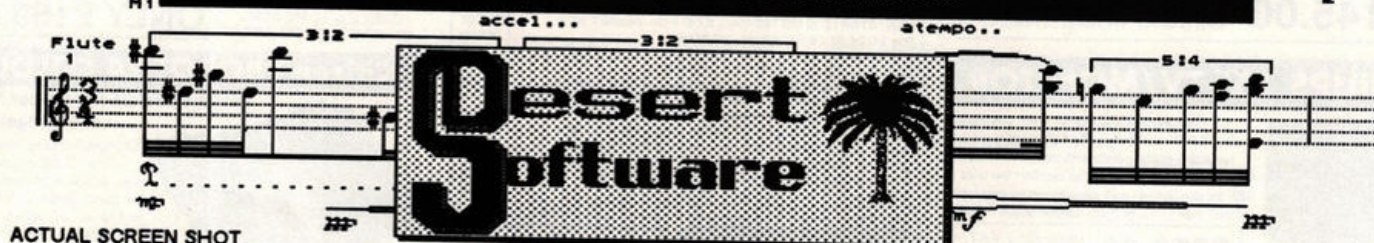
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A joy to hold

Gravis Switch Joystick

MACHINE: ALL STs

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FROM: SPECTRAVIDEO

CONTACT: ☎ 081 900 0024

The arrival of the original Gravis MouseStick (RC Simulations ☎ 0272 550900, £70.50) caused something of a stir in the "serious" joystick market earlier this year. Now it's joined by its less-versatile stablemate, the Gravis Switch Joystick which, although it looks very similar, is a different animal altogether.

The Switch Joystick uses the same casing as the MouseStick and as a result is a very robust and professional-looking piece of equipment. The only real difference is what's inside – and since it comes in either black or clear plastic, you can actually see the insides if you wish!

The Switch Stick features the same panel of buttons and rotary switches alongside a tough, well-padded adjustable stick. The stick sports a thumb-operated micro-switch at the top of the shaft and is covered in the kind of non-slip black padding which skateboarders use. There's little danger of this one slipping out of your hands!

The base-panel is a solid block of plastic containing the Switch Stick's mechanism.

Is your joystick on its last legs? If so, maybe it's time you went for an upgrade to something a little more "serious." Or, to put it another way, do you want yours to (a) run your ST, (b) impress your friends or (c) get you invited on Wogan? Neil Jackson gets to grips with a new offering from Gravis that promises much and even delivers – but at a price...

backward movement and the shaft-mounted switch functions as a normal "Fire" button. This kind of setup is ideal for car-racing games: you no longer need to concentrate on pushing and pulling the stick, just steering. The accelerate/decelerate is now button-operated, more like a real car, and the top "Fire" button changes gear as normal. Alternatively, you can set up all three switches to function as turbo buttons, giving you a shot repeat-rate of around 10 blasts per second on any switch you happen to hit in a tight corner.

The Switch Stick shares another

of the MouseStick's useful features: adjustable stick tension. It uses an ingenious system of springs and balls held in place by a stepped ring, so you can turn the stick from a sloppy, porridge-stirring device into a tight, springy controller. There are 11 different settings for the tension wheel, providing enough flexibility to suit virtually anyone, in any application.

Unfortunately the Switch Stick's downfall has to be its price. At nearly 40 quid, only the real "joystick snobs" are going to be attracted to it. While it's a nice design and built to last, the Switch Stick doesn't actu-

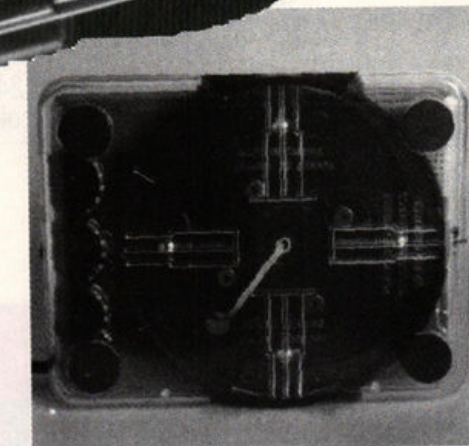
While it's a nice design and built to last, the Switch Stick doesn't behave any differently to normal joysticks which cost around ten quid

● The Switch Stick is a robust design, offering programmable joystick buttons and adjustable stick tension but is it really worth £40?

It has foam rubber feet to stop it sliding around the table top instead of the more common sucker-feet and is therefore easier to pick up and use with two hands. The flat nature of the base enables you to use the

base as a lever against the stick shaft. (If you're left-handed you may disagree, considering that the panel buttons are both mounted to the left side.) However, the whole assembly is a bit weighty and long sessions with it may be tiring for those with smaller hands.

Just like the MouseStick, the Switch Stick has lots of extra features which make it special. Along the left-hand edge of the base are three rotary switches, set into the panel itself. Each switch controls the setup for one of the three main micro-switches. There are four positions available: normal, forward, backward, and turbo. These enable you to pre-program any of the main switches to duplicate a certain function. You can, for example, set up the Switch Stick up so that the top left button duplicates the forward movement of the stick, the bottom left button duplicates the



● No, it's not a pizza or a clock – it's the underside of the Switch Stick. Each of these switches controls the way the micro-switches are set up.

ally behave any differently to normal joysticks which cost around ten quid. If money's no object and having a plush joystick is what you're after, you'd do better to look at the original MouseStick (see ST FORMAT 24 where we the Mousestick in detail – if you missed that issue then turn to page 136) which can do all that the Switch Stick can, and more! **stf**

FORMAT RATINGS

Gravis Switch Stick £39.99
Spectravideo
☎ 081 900 0024

FEATURES: 88%

More features than most standard joysticks, including adjustable tension and three configurable buttons

EASE OF USE: 85%

Not as complex as the MouseStick, but still requires a bit of thought when reprogramming buttons.

RESULTS: 90%

Performs as well as a joystick can. It has a professional feel and its movement is slick and smooth.

FORMAT VALUE: 85%

Nice Stick, shame about the price. Why pay four times the normal price for something only twice as good?

THE COMPETITION

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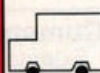


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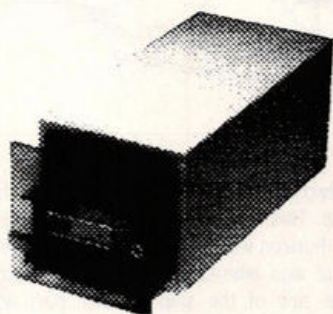
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Art, you know, comes from the soul. It comes from the spirit. It comes from the psyche. But most of all, it comes from you and your STs. Join with Ed Ricketts now as he wibbles uncontrollably over these pages.

This man is driving along a road at night when a rabbit darts out in front of his car. Unable to stop in time, he runs it over. As he stands by the small furry body, struck with guilt and grief, a vicar pulls up alongside and asks if he can help. The man explains what happened. The vicar brings out a small phial of liquid, which he sprinkles over the body. In a second, the rabbit jumps up and runs off. The motorist is amazed but baffled. "What was that liquid?" he asks the vicar. "Holy water?"

"No," the vicar replies, "hare restorer with a permanent wave."

Which in a roundabout way I'm not

going to explain now brings us to your pictures for this month. We're greedy beggars here at Kandy - we're never satisfied. Send us more! More! More! They can be on any art package with any technique. Just remember to include plenty of intermediate stages and lots of explanation along with the package used and any other interesting bits you can think of. Stick everything onto a virus-free disk (the explanation may be a ASCII text file if you haven't got a printer) and send it to Gallery, ST FORMAT, 30 Monmouth Street, Bath, Avon BA1 2BW. And remember: you can lead a horse to water, but you can't make it wink. **stf**

WE'VE RECEIVED DOZENS OF

Peter Halloran of Dorset sent in several pictures, and for his sterling efforts wins the slightly stunning £25 prize. Peter always uses Deluxe Paint for his pictures.

What is it about cartoons that gets you pulling out your crayon set? Peter's first picture is yet another rendering of Garfield - who, along with

the pictures of fighter planes and cars, must be the most popular subject for your art. This one took three hours.

"The subject was chosen because I thought it was fairly simple but appealing. The ST seems particularly well suited to cartoons, because of the solidity of its colours.



1 I started by creating a very rough outline using the draw, line and curve functions, with circles being used for various things such as the eyes. Some colour was added now both to see how the picture would turn out and to check that the palette was okay - not too bright or dark. The head was drawn first so that everything else fell into place.

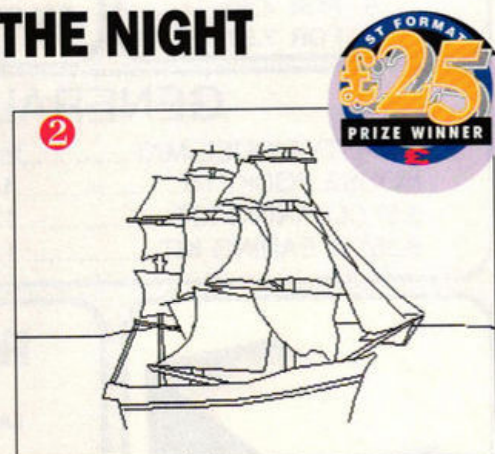
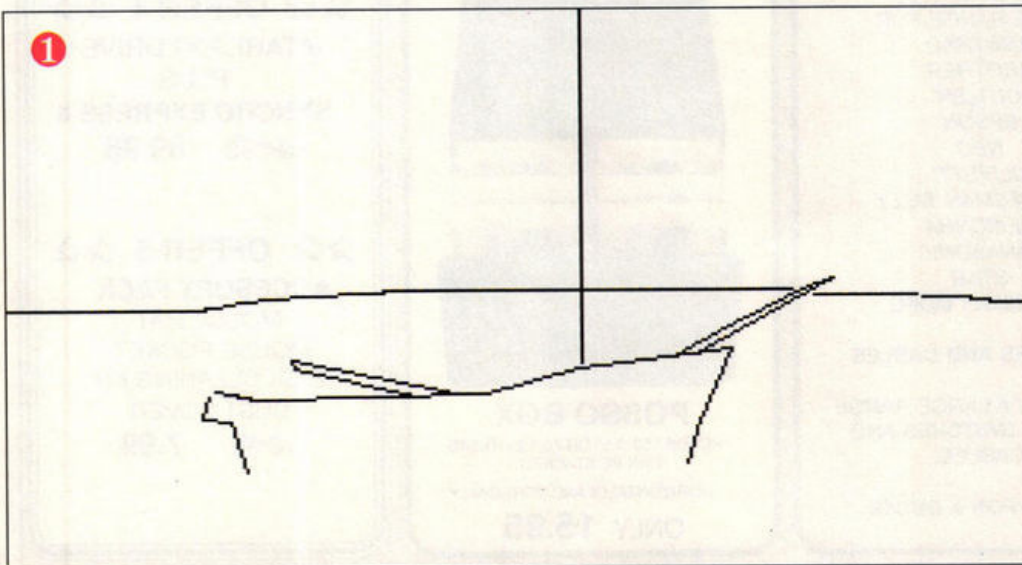


● Rigo is a title page for a game I haven't written yet. This was taken from a front cover of 2000AD and altered to suit the game.

SHIPS THAT PASS IN THE NIGHT

This picture is one of a sailing ship, also from Peter Halloran of Dorset. "This took me around 12 hours to produce" - not in one go he hastens to add.

1 This doesn't look much, but it was the picture that defined the palette and the layout of the picture. The palette was chosen to give a full range of greys, a range of blues for both the sky and sea and some other colours like browns, black and white.



2 Picture two shows the base outline of the ship plus sails. This was drawn using freehand, line and curve. The horizon was put in to give the picture some depth, but was altered later on. Unfortunately because of the size of the ship a small part was missed off the top of the main mast, but this doesn't detract from the picture itself. I could have moved it down, but would have lost some of the sea.

3 Here the sails were coloured using gradual tones of grey - this was an attempt to make the sails look as if the wind was behind them. Once the sails were done I felt that they were too dark and by using the stencil feature the colours were lightened to the shades they are now. Various pieces of rigging were placed over the sails and coloured accordingly. These were done by using both the line and curve

REQUESTS - BUT IT'S HIM AGAIN



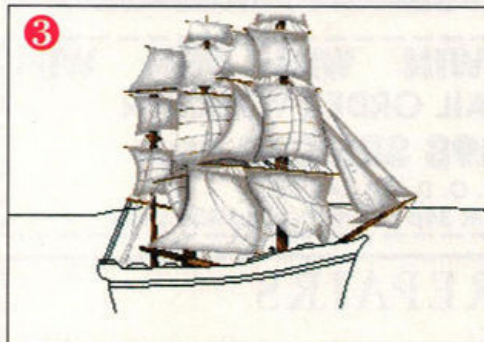
2 The outline was completed and rounded off under magnification - x8 is best because it allows a greater deal of accuracy while not being too detailed. Whenever you draw characters you need to sketch out curved lines. Working freehand, it's difficult to get the best possible line but by zooming in you can see how every pixel has been laid down. This enables you to carefully map out a perfect line from your original rough sketch. The scales were put in and all the base colours added. Garfield's orange was the lightest I had in the palette and was used as the base. This freed up an extra colour in the palette so that I could add some effective shading to Garfield. I made up two extra oranges in the palette which I then worked into the darker base colour. It's much easier to work from dark colours to light, adding highlights much later.



3 Here I started the shading and smoothed or antialiased various parts. This was done by hand because I always think *DPaint* seems to smooth too much. The stripes were added, done by hand under magnification, and only certain parts smoothed, leaving the stripes looking rough, which is exactly the effect I wanted. The rest of the body and the scales were smoothed and the speech bubble was added. This was done by first drawing a flattish ellipse (not filled in) and then covering it with lots of other small circles. These were then filled white and the text was added using the line function. All this was smoothed, using the zoom option at x8 magnification again and I also tidied up the weighing machine. After tinkering with the colour palette for a while, that just about finished the picture."

functions. The masts were also coloured and since there were only three browns in the palette, black was used to shadow them.

4 In the fourth picture the main body of the ship was coloured. This was done in blue because of the palette restrictions. This also meant that the sea would have to be lighter around the



base of the boat to make it stand out. The sea was created mainly using the smear feature. Large chunks of colour were placed on a base background with the largest brush and were then smeared with the largest round brush. Some of the lighter colours were also antialiased to produce an attractive smooth wave effect.

The wash coming off the ship was done in a different style, because any smearing would mess up the outline of the ship. First the background was fixed and then the wash was carefully airbrushed on. Once I was happy with it I freed the background and did any smearing that had to be done very carefully.



5 The sea was finished and the horizon was made flat. This gave the impression that the ship was out at sea. The horizon was highlighted by using a stippled effect to give the impression of distance. Finally clouds were added. These were done by drawing dark blue lines and adding white disks of various sizes on top. They were then edited under magnification to appear light and fluffy. A similar approach was used by the *Midwinter 2* artist [Andy Elkerton, who revealed all in *STF 24* and *25*. If you missed those see page 136]. And that's The End."

• Deluxe Paint is £49.99 from Electronic Arts ☎ 0753 549442.



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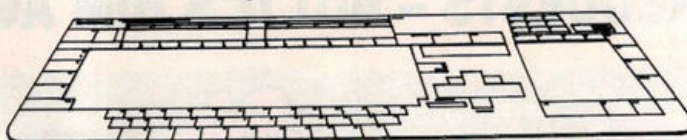
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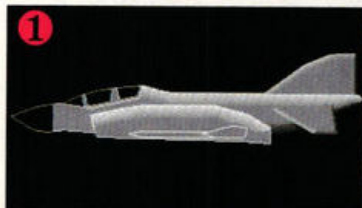
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PLANE TO SEE - 1

I don't know, kids these days, eh? Grow up much too fast. Take **Alastair Douglas** of **West Glamorgan** in Wales. Only 10 years old and he's sending in pictures like these. He'll be driving before he's 12.

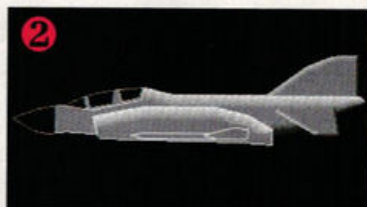
"This picture was done with Canvas.

1 I did a line drawing using the K-Line option and touched it up with Zoom, before choosing a palette with lots of greys, greens and two shades each of red and blue. The out-



line was shaded, stippling to make it look as if there are more shades than there really are.

2 The shading was finished and camouflage was added, as were other details, using Zoom. At this point I swapped screens and using the Text function I typed in all the necessary text. Using Zoom I then gave this text a smooth 3D effect, and a horizon added to it to make it look shiny. Finally a sparkle was added to the corners of each letter.



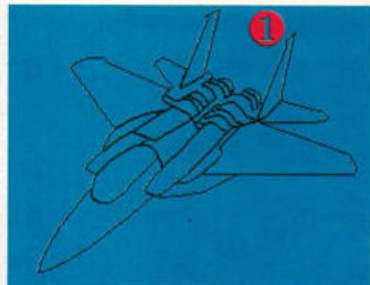
3 The last thing for me to do was to use the Block function in Canvas to cut and paste the text into the correct position over the plane.

The picture took me around seven hours to do on and off and I think it's the best I've ever done."

● Canvas is £14.95 from Microdeal ☎ 0726 68020.

PLANE TO SEE - 2

Mohamed Parker of **Middlesex** says he used *Degas Elite* for his picture of an F-15 Strike Eagle, "mainly because it was the first art package I bought (I had *NeoChrome* but I didn't like it much) and it is very intuitive to use, with plenty of keyboard short-cuts.



1 First of all I set up a rough palette. The plane is metallic so I included all the grey-scales (shades of grey) in the palette. Next I used the K-Line function to draw a basic outline of the plane. At this stage there's no need to worry about getting the shape exactly right - but it does help if the general proportions are correct. I then used the Zoom function to tidy up the outline and add some details. I usually use six times magnification because this gives a good balance between the level of detail and the amount of area you can see.

2 Once most of the larger details have been added I use the Fill function to fill in areas of the plane with the colour that is likely to be prominent in that area in the finished picture. The colours don't need to be precisely chosen - they are just there to give a rough indication of how the final picture should look.



3 After that I used the Zoom function again to shade the plane more carefully. I use close shades next to each other to give a smoother appearance. This is especially apparent on the nose of the plane, which looks far more rounded and solid than it did before. I found at this stage that

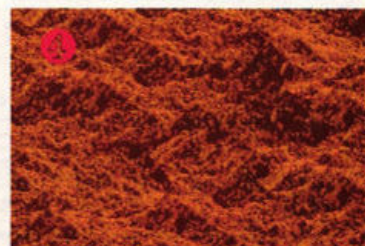
the eight shades of grey (including black and white) were not enough to give really smooth shading, so I used stippling (using two close colours in a chequered pattern to fool the eye into seeing the colour in-between) to get some extra shades. The plane still looked a little flat, so next I added high-

lights to straight edges such as the wings and tail fins. I also added a diffused highlight (not as bright as on the straight edges) to the nose of the plane to make it even more rounded.

4 For the background, I attempted several times to draw a landscape as seen from 10,000 feet in the air, but none of them looked particularly realistic (or even remotely good for that matter) so I used a fractal landscape drawing program to create the background. The palette used by the program was different from that of my picture, so I used the Load Image function, which gives an option to alter the palette of the loaded picture to fit in with the palette being used.

5 The plane was then cut out and pasted onto the background. Finally the titles were added to the picture and at last it's finished."

● Degas Elite is £24.95 from EA ☎ 0753 49442.



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For the last six months, *ST FORMAT* has brought you an exclusive step-by-step guide to programming in assembly, courtesy of hit programming team Bullfrog, who are currently in the middle of writing *Populous 2*. Now, in the final part of the series, ST programmer Glenn Corpes reveals how to add those professional touches to the games you write yourself.

ALL YOU NEED



The files you need to follow this tutorial were yours on last month's Cover Disk. To follow the development of this game go back to the very start of this series in **STF 21**. If you missed any of the issues, see 136 for the **FORMAT** back issue service.

This is the last article in our assembly programming series, and since the demo could almost be considered a “proper” game, this month we concentrate on enhancements – some simple, some not so simple.

SOME VERY SIMPLE CHANGES

There are already 21 equates at the top of the file that can be changed, giving millions of possible tunings – although I admit most of them would make the game too easy or difficult. This one is fun for five minutes at least.

1. Remove the semicolon from `RAPID_FIRE` to turn rapid fire on.
2. Change `MAX_SHOTS` to 128,
3. Change `NO_NASTYS` to 32,
4. Change `MORE_NASTYS` to 4.
5. Make the change detailed below to make the balls bounce off the edges of the play area.
6. If possible it would be a good idea to add a faster sprite routine – this really slows down!

SOME SIMPLE(ISH) ENHANCEMENTS

All of the following changes are very small, but should give you some idea of how and where you can tweak your program.

At the moment the game just keeps throwing wave after wave of nasties at you relentlessly. This continues until play becomes impossible or you make a mistake and die, which makes the whole game seem even more pointless than it was already.

You can make the game slightly more professional by displaying a message which tells you that a new wave of nasties is starting. The following code should replace the `puts` at line 301. If you are going to type it in you can leave out the comments on the right hand side (after the semi-colon).

```

move.w    vnum_nastys,d0      ;The number of
                                ;nasties
                                ;minus the initial
sub.w     #NUM_NASTYS,d0      ;number of nasties
                                ;shows current wave
lea       wave_num(pc),a0      ;as there is no
                                ;variable for wave
                                ;number.
bsr       _bin2dec             ;Convert it to a
                                ;string for printing
move.l    _d_screen,a1         ;in the text box.
moveq     #4,d0                ;Initial x coord
                                ;of box.
moveq     #0,d1                ;Initial y coord
                                ;of box.
moveq     #22-1,d2             ;Draw box 22 times.
waveloop
bsr       _wait_vbi            ;Wait for one 50th
                                ;of a second
sf        _vbi_done            ;wait for another
                                ;50th of a second,
bsr       _wait_vbi            ;so the wait is for
                                ;a 25th of a second
movem.w   d0/d1/d2,-(sp)
lea       wave_box(pc),a0
bsr       _do_box              ;Draw the box
movem.w   (sp)+,d0/d1/d2
sf        _vbi_done            ;Flag vertical
                                ;blank, ready for
                                ;first wait above
addq.w    #1,d0                ;Move left
addq.w    #1,d1                ;Move down
dbra      d2,waveloop          ;Loop
rts
wave_box
dc.b      ';<<<<<<<<<=',0
dc.b      '>WAVEG'
wave_num
dc.b      '00000?',0
dc.b      '[\\\\\\\\\\\\\\\\\\\\]',0,0
even

```

The only problem with this program code is that the game stops while the text is printed. It would be a

very useful exercise to see if you could get the "wave box" to move while the game is running. This is a fairly simple change to make, but the new instructions would need to be spread throughout the entire program, which makes it a bit too messy to start explaining here. You can develop this idea yourself as an exercise, if you feel up to it!

There is another problem in the above code. The wave number is calculated as being the number of nasties which are active on the current level minus the original number. This works perfectly if `MORE_NASTYS` is set to 1, but if you change `MORE_NASTYS` to 2 for instance, then the levels go 1, 3, 5, 7 and so on. The solution to this problem is to add another variable at the bottom of the code called `WAVE` or something. This needs resetting at the beginning of each game and incrementing each time the routine `_init_all_nastys` is called. It's a very simple change to make but again it would be in three places, so you are going to have to work it out for yourself.

ADDING SOME PUNISHING PENALTIES

The following simple change subtracts three points from your score every time you fire a shot. This effectively gives you a bonus for not hitting the "Fire" button too often so no one's going to leave the joystick auto-fire permanently switched on. Just insert the following code at line 696:

```

    move.w    score,d0
    subq.w    #3,d0
    bmi.s     cant_go_minus
    move.w    d0,score
cant_go_minus

```

For a really professional (and easy-to-debug) program, the `subq.w` `#3,d0` should really read:

```
subq.w    #FIRE_PENALTY,d0
```



● In *Powermonger*, Bullfrog managed to combine their passion for isometric 3D with some very fast sprite and movement routines.



● Here's the finished game. Now play with the variables and you can make it even more playable and challenging. On course for a **FORMAT Gold**?



● *Flood* was the Bullfrogs' first cutesy game. Many of the routines used in this tutorial have come from *Flood*. Who knows what we'll be seeing in *Flood 2*.

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➔ and FIRE_PENALTY equ 3 should be added to the equates at the top of the file. You can then make the game easier or harder simply by changing the value of this equate.

Another change is to make the balls bounce off the side of the playing area. Insert this code after the label still_positive at line 742:

```
tst.w    d0          ;Has x gone negative?
bpl.s    msxpos      ;No
neg.w    d3          ;Reverse velocity
add.w    d3,d0       ;Move it back into the
                    ;playing area

msxpos
cmp.w    #320*4,d0   ;Is x past left of
                    ;the playing area?
bmi.s    mxless      ;No
neg.w    d3          ;Reverse velocity
add.w    d3,d0       ;Move it back into the
                    ;playing area

mxless
tst.w    d1          ;Has y gone negative?
bpl.s    msypos      ;No
neg.w    d4          ;Reverse velocity
add.w    d4,d1       ;Move it back into the
                    ;playing area

msypos
cmp.w    #192*8,d1   ;Is y past bottom
                    ;of playing area?
bmi.s    myless      ;No
neg.w    d4          ;Reverse velocity
add.w    d4,d1       ;Move it back into the
                    ;playing area

myless
```

The above change is most impressive if MAX_SHOTS is set to a large number, like 128.

SOME MORE SUBSTANTIAL CHANGES

These are not simple "type in and there you go" changes but they are ideas which should be fairly straightforward if you understand 68000 programming techniques – or you've gleaned enough information from this series of articles.

1. Shot-collection bonus

How about a bonus for picking up shots that are still bouncing around the screen? You would need to check the collision (compare the coordinates) of the player against all of the active shots. If they collide you then need to kill the shot off (by clearing its mode) and add something to the player's score – probably FIRE_PENALTY multiplied by two. As well as adding a small feature to the game, it would also help make more shots available when MAX_SHOTS is set to a small value.

2. High score table

How about a high score table? Although not very exciting to write, this routine would be useful – it needs to sort the scores, insert new high scores into the table, and read the keyboard for the player's name.

3. Load screen

Adding a load or title screen to a game is very simple indeed. All you need to do is load a .NEO format file. NEO files are 32,128 bytes long, of which the first 128 bytes form the header and the remaining 32,000 (160x200) are the raw screen data. You can decipher NEO format as follows:

- Ignore the first four bytes.
- The next 32 bytes are the 16 words of the palette. Copy these into the palette's hardware registers (defined as H_PAL in the program).

- Ignore the next 96 bytes, which are for colour cycling and speed of cycle.

- The remaining 32,000 bytes are the raw screen data which needs to be copied to _w_screen. When you've done this, call _swap_screens and the load screen is displayed.

4. Record Buffer

Every game turn, a byte is read from the joystick and the player's movement and firing is calculated from this. If you store these bytes in an array you have a recording of all of the movements in the game. To play back the recorded game, change the joystick routine so that it takes the bytes from the array instead of from the stick. The replay is exactly the same except for the random numbers which change every time. To solve this, store the variable "seed" somewhere safe before recording and put it back where you found it before playback. Because the numbers are only pseudo-random the same sequence occurs the next time and the playback is exactly the same as the gameplay.

The memory needed for the record buffer varies according to the speed of the game. If the game ran at 50 frames a second (which it does very occasionally) you would need 50 bytes per second or 3,000 bytes a minute, or 15,000 bytes for five minutes. Because the game slows down so much, you could store at least 10 to 15 minutes' playing in 15K.

This sort of recording system is often used in rolling game-demos. I did it this way when I wrote the rolling demo for Fusion, and I use this kind of buffer in Populous 2 (previewed this issue on page 40).

5. Speeding up the sprite routine

Ah, the sprite routine! This sprite routine is about two years old and is not supposed to be lightning fast. The main reason for the sprite routine being so slow is the speed of the shift instruction on the 68000 processor. The further you shift a word along, the longer

This series should at any rate get you started in 68000 programming – the rest is up to you!

it takes. A sprite shifted by 15 pixels takes about twice as long to draw as one shifted by 0 pixels. On some processors (even some of the others in the 68000 family) the shifts are handled by a barrel shifter and all take the same amount of time.

Of course changing your processor is a little drastic but there are some other ways. Try changing a right shift of 9 to a left shift of 7, a right of 10 to a left of 6, and so on. This means you need two kinds of sprite routine, but they speed things up quite considerably. It is also possible to pick up two planes of the data at once with a move.l and shift with a long shift. This takes about the same time as a word shift but does twice the work. To use it, the code would need further rewriting.

6. Organised palette

Having the palette in a specific order has some advantages. For instance, the shadows are drawn only on top of the background, which is only in the first two planes. The shadow is the dark green colour which is also in the first two planes. The shadows could therefore be drawn with a special routine that only touches two planes. This would almost double the speed of



● Glenn Corpes is one of the original Bullfrog programming team and he's an ardent ST fan.

drawing the shadows. Incidentally, this is how the shadows on the ST version of Fusion were drawn.

The shots were originally bubbles (about three issues ago). If the palette was organised so that the last four colours were the blues and white, you could draw the shots by simply setting the last two planes on. Again the routine would be faster and the shots would be transparent. This method was used for the floodwater on Flood.

7. Pre-shifted Graphics.

Another way of getting rid of the shifts is to store 16 copies of all of the graphics, one at each possible shift position. These pre-shifted sprites are very quick to draw but take up over 16 times as much memory. Even with the limited graphics of this demo it would be impossible to pre-shift all of the sprites on a standard 520ST, but it would be well worth shifting the nasties and the shots. If the shots were also drawn in fewer planes (see 6 above) then their pre-shifted data would take up less memory space. This is how most fast scrolls and sprite routines are achieved in popular PD demos.

There are of course heaps of other little tricks that I'm not going to tell you about, because (a) we have to have some trade secrets and (b) they're mostly little fixes and shortcuts we discovered when trying to solve particular problems. This series should at any rate get you started in 68000 programming – the rest is up to you! **stf**

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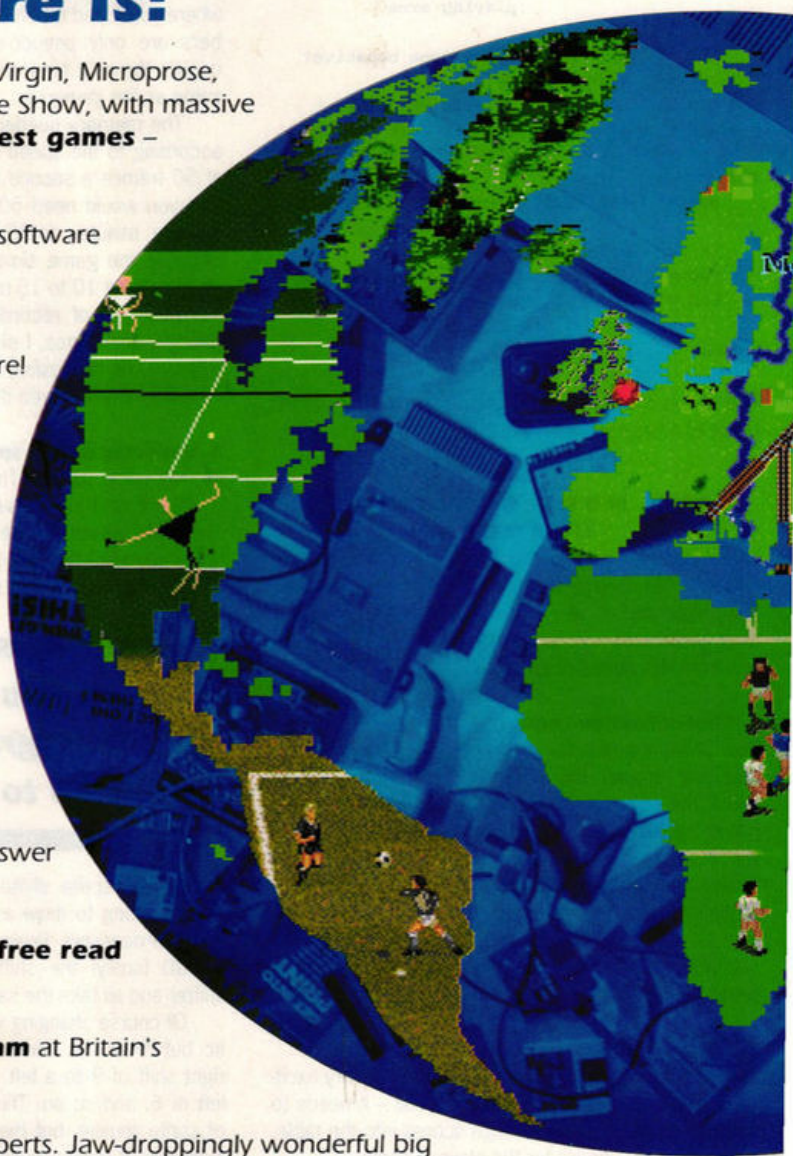
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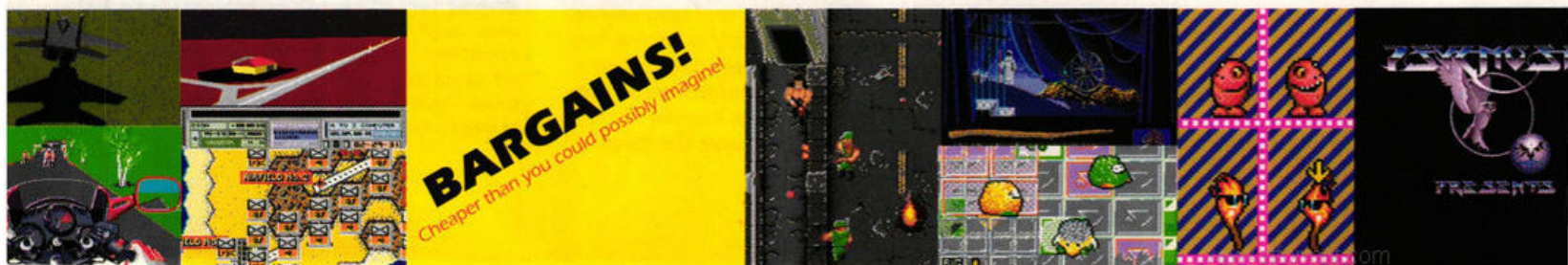
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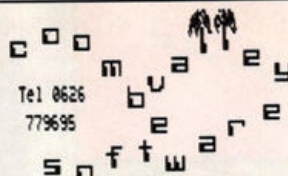
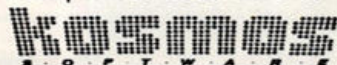
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A set of matching games

You're never too young to start learning what an ST can do. *STF's* education specialist Terry Freedman checks out a variety of software for the pre-school age group and gives you the lowdown on how the ST faces up to the challenge laid down by the National Curriculum

Whether or not it's because Christmas is approaching, suddenly there's a new batch of software for the very young on the market. There are a couple of nice looking programs from Ablac, reviewed here, and by the time you read this there could be another *Fun School* package out. (The last, released almost exactly a year ago, was reviewed in *STF* 15 and proved good enough to earn *FORMAT* Gold.)

What does a "good" piece of education software look like? Well, it ought to grab the attention first of all, and then it has to retain it. The learning should be fun, and I think most teachers would agree that the child shouldn't think of it as "work." There should be plenty of positive feedback – that is, rewards if you do well, and not being called an idiot if you don't. But children won't be patronised. The problem has to be within their grasp, but they want to be challenged. This means that a really good piece of edsoft should have the provision for an adult to move the goalposts as the child progresses.

SAY HELLO TO TERRY

● Terry Freedman is Head of Information Technology at William de Ferrers School, a secondary school in Essex, and also writes for the *Times Educational Supplement*



Memory Lane

AGE RANGE: 2-6

MACHINE: ALL COLOUR STs

PRICE: £24.99

FROM: ABLAC COMPUTEC LTD

CONTACT: 0626 332233

This package aims to help children hone their powers of discrimination. The ability to recognise shapes and make some sense out of them is obviously an important prerequisite for learning how to read and manipulate numbers, and this program helps children learn these skills by offering them five different types of matching game: exact matching, matching related objects, matching words and pictures, matching from memory and remembering the order in which items are presented.

All of these skills are essential, and *Memory Lane* tackles them in a lively and stimulating way. Apart from the variety of activities, there are amusing animated graphics. Every time you get the correct answer, something interesting happens – for instance, a dog wags its tail – and this acts as a reward or incentive. I like the way your ST even reminds you to get started if you don't press anything for a few minutes once you've started up!

In terms of variety and presentation, *Memory Lane* is better than similar programs like *Mix and Match* (£24.99 from Scetlander ☎ 041 357 1659; reviewed last issue – if you missed that, see page 138 for the *FORMAT* back issues service).

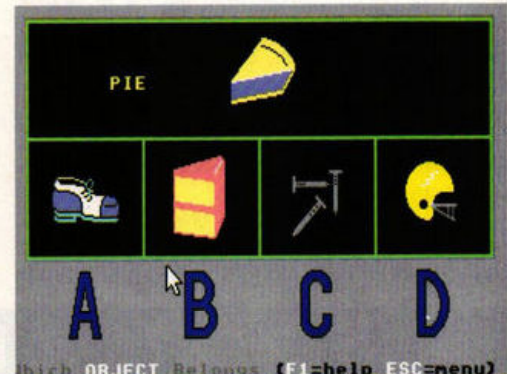
However, both this package and *My Letters, Numbers and Words* (below) suffer from a few drawbacks. First, there is very little parental involvement. Apart



● In Ablac's *Memory Lane* you can choose from five recognition/matching activities, from exact matching to recalling the order in which items were presented

from being able to decide how much help the child gets or how difficult the puzzles are, the parent can do very little. By comparison, the help for parents in Scetlander's *Mix and Match* is impressive. Press <Control>-T at the start of that program and you are presented with a whole range of options, such as controlling the timing of the "tests," deciding whether the results are recorded or not, and getting a printout of the results themselves. This last one means you can pinpoint the areas where your child is having problems. Here, however, the results aren't recorded at all, so they can't be analysed afterwards.

Memory Lane's manual gives little food for thought, being for the most part concerned with technical matters. Another drawback, which can be important at this age, is the fact that the program originated in the US and it shows. I haven't come



● This game in *Memory Lane* demands understanding as well as memory: you have to choose the item which belongs to the same group as the one on top

across any American spellings yet, but there are potentially confusing cultural oddities such as baseball bats and football helmets.

There are certainly some very good aspects to this program, but its drawbacks, particularly in the area of parental help, mean it probably needs to be supplemented by something else.

Contents: 1 5.25 Disk; 15pp Manual; Boxed

PRESENTATION	7
EDUCATIONAL VALUE	7
EASE OF USE	7
LONG-TERM INTEREST	4
VALUE FOR MONEY	7

OVERALL 64%

MY LETTERS, NUMBERS & WORDS

AGE RANGE: 2-6

MACHINE: ALL COLOUR STs

PRICE: £24.99

FROM: ABLAC COMPUTEC LTD

CONTACT: 0626 332233

From the same stable as *Memory Lane* comes this shape recognition tutor, which you could see as a complementary program to it. Trouble is, you'd be wrong, because even though *My Letters, Numbers and Words* has a slightly different aim it has the same strengths and the same weaknesses.

The purpose of this program is to teach youngsters to recognise letters, numbers and objects. An



● There's plenty of choice in *My Letters, Numbers and Words* – but in fact not very much variety.

interesting feature is the option to have a pair of hands on the screen showing you which finger to use to type a letter. Thus the child can start to learn keyboard skills from the word go.

Like *Memory Lane*, this has some attractive graphic effects, but not quite the same variety. What *Memory Lane* lacked in parental control it made up in the degree of variety it offered. This package doesn't have that compensation. Still, it does do the job it sets out to do, and it does it reasonably well – probably better than many other programs. I suppose the



● Once you've managed to complete the word "lion," there are some interesting graphic effects!

real problem is whether you want to buy a package which is so narrow in scope compared to other edsoft

PRESENTATION	7
EDUCATIONAL VALUE	7
EASE OF USE	7
LONG-TERM INTEREST	4
VALUE FOR MONEY	7
OVERALL	67%

CH001/E

AGE RANGE: VERY YOUNG

MACHINE: ALL COLOUR STs

PRICE: £1.50

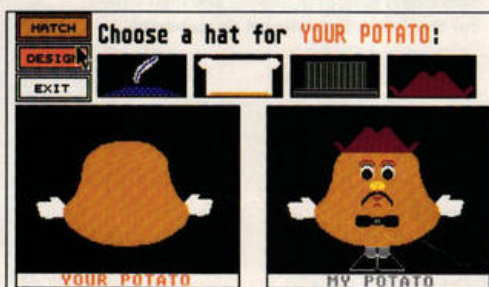
FROM: C.HACK'S PDL

CONTACT: 0268 416888

This inexpensive disk contains four of the "Kids" programs: *Kids Potato*, *Kids ABC*, *Kids Sketch* and *Kids Story*. The first of these consists of two options: you can either match the way your potato is dressed to the one on the screen, or dress your potato yourself from the set of clothes you're given. A bit limited in scope, and not likely to keep you riveted for ever, but a good bit of fun and educational too!

Kids ABC is another matching/recognition exercise. You have to type in the alphabet in the correct order, with or without on-screen help. Type the letters in correctly and a tune is played.

Kids Sketch is an unusual drawing program: it simulates one of those hand-held plastic drawing machines where you twiddle the knobs to get a rather



● You have the choice of matching your potato to the one on the screen – or designing your own outfit!

angular picture. In many respects, giving children a pencil and paper is a much less fiddly and more educational option. In the case of our review disk, it was the only option – *Kids Sketch* didn't work!

The final program on this disk, *Kids Story*, is very good fun, and is bound to appeal to children's imagination – it appealed to mine! You have to choose various objects at the outset, and these are then incorporated into a story based on Little Red Riding Hood which the program makes up. The resulting story makes sense in the same way that "Alice in



● *KidsABC* is simple if you know your alphabet, but you know when you've got it right – a tune is played!

Wonderland" makes sense. This program will keep you going for hours! **Contents : 1 SS Disk**

PRESENTATION	7
EDUCATIONAL VALUE	7
EASE OF USE	6
LONG-TERM INTEREST	6
VALUE FOR MONEY	8
OVERALL	67%

● Kid Potato, Kids ABC, Kids Sketch and Kids Story, as well as other programs in the "Kids" series, are available from many other PD libraries – try BSoft (☎ 0734 416492), Floppyshop (☎ 0224 312756), ST Club (☎ 0602 410241) or your local PD library – see *FORMAT*'s directory, page 50.

INFERIOR? YOU MUST BE JOKING!

I've read a couple of articles in other journals recently expressing the opinion that the Atari ST could not be put to serious use. Well, let's look at the facts as they relate to education.

The "National Curriculum" introduced by the Government lays down that pupils must be able to use a computer in a number of ways or "strands" by the time they leave school. How does the ST measure up in terms of these "strands"?

● Communicating Information

The ST does admirably here, with some excellent word processors, databases and other applications available. Included in this is presentation of work, so art and DTP packages are also relevant.

● Handling Information

This section is all about manipulating information. The ST's friendly GEM environment makes it easy for children to get into computing, and there are some great spreadsheets, graph programs and so on for the ST – and they quite often "talk" to each other too!

● Measurement and Control

There are some very cost-effective ST data-logging devices for the collection and measurement of data. And when it comes to control, you need look no further than the MIDI music scene – where the ST excels, with its built-in MIDI ports and unrivalled range of software.

● Modelling

Not "modelling" in the everyday artistic sense, but in the academic sense of representing a process or an event. Well, even some of the games around these days do that! And of course there are the CAD (computer aided design) packages, plus common or garden spreadsheets.

So there you have it. The plain truth of the matter is that the ST with the right software is more than capable of delivering the goods as far as education is concerned. To prove this, in a couple of months' time I'll be giving you an in-depth insider's report on how one school in particular is using Atari's to provide children with the computer experience they need.

WAIT FOR A SPELL

Next month we take a close look at spelling programs, including the new "Henrietta" offering from Scetlander and a couple of Public Domain programs. In future issues, we'll be looking at multi-lingual word processors and some excellent information-handling and modelling packages. To make sure you don't miss out on these or any other forthcoming features in *ST FORMAT*, turn to page 136 for information on how to subscribe.

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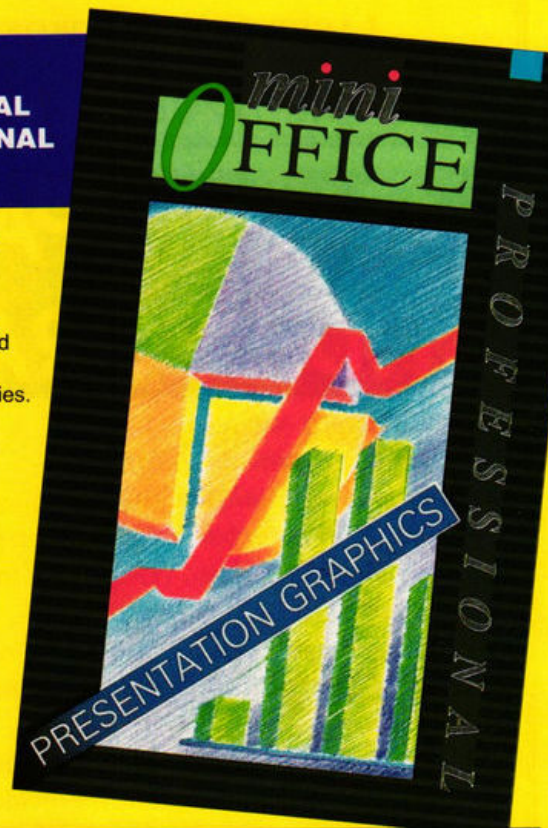
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Desktop



CUT TO THE QUICK

£30 WINNER
Do you own a Quickshot or Quickshot 2 Turbo joystick? Yes? Then why not get your own back on the programmers and boost the autofire rate? This modification from **CJ Carden of Brighton** can turn your slothful shots into high speed hellfires. There's a bit of soldering involved on one component, but that's it.

To carry out the mods, you first need to get the circuit board out from inside the joystick. There are four philips-head (cross-head) screws on the underside of the joystick's base. Remove these carefully and then gently open the casing. Sitting in the bottom half of the casing is the printed circuit board (PCB). This might be screwed down or just resting on some notches. Either way, remove it carefully. You shouldn't have to remove any of the wires which connect to the joystick's handle: there's generally enough slack to remove the PCB and work on it. If you have to disconnect anything, remember where it connected and make sure to re-join when you've finished.

Using the diagrams on the right, track down the green capacitor. There are only two capacitors on the Quickshot 1, and three on the Quickshot 2, so locating it shouldn't be too hard. There's a slim chance that your model has a different coloured capacitor, in which case you should look at the written info on the side of the capacitor. It should say 104K100 – which translates as 100,000 picoFarads (pF) capacitance, with a tolerance level of up to 100 Volts. It's possible it may say instead 100nF (nanoFarads), or 0.1 µF (microFarads) instead, but these both mean the same. You need to change to a 10,000 pF (or 10nF or 0.01µF) capacitor. The 100V tolerance is not important: there are no more than 5 volts floating around inside your joystick. If you're ordering from Maplins (☎ 0702 554161) the correct stock number is WX03D, Mica 10pF and it costs around 28p.

Remove the old capacitor by desoldering it carefully, and replace it with the new one. It doesn't matter which way round you place it, because it is not polarised. When you've finished, re-assemble the casing and away you go. Your fire-rate should be about ten times faster than it was before.

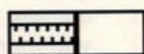
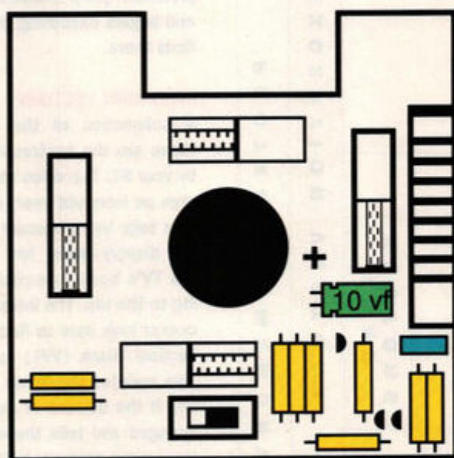
GOT ROOM FOR YOUR ROM?

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If you, like **Mike Haselup** from **Brentford**, are thinking of upgrading from TOS 1.2 (or TOS 1.0) to TOS 1.4 (the Rainbow TOS), it's as well to check this out before you order your new chips. The early operating systems came in two arrangements: a two chip set and a six chip set. If you're swapping a six chip set for a six chip set then everything's cool – you can just plug them straight in and you immediately have an upgraded ST. But if you're changing from two chips to six chips you need to alter a few other things inside your machine.

There are three groups of solder jumpers (semi-circular silver pads which are separated by a small gap) with markings A17, A16 and CE nearby. Each marking has two jumpers, one marked 1M and one marked 256K. When using the six chip set, the gap

Take a closer look inside your ST this month. Find out what's what and learn its secret thoughts. Neil Jackson is your interpreter.

QUICK-SHOT 2



= switches

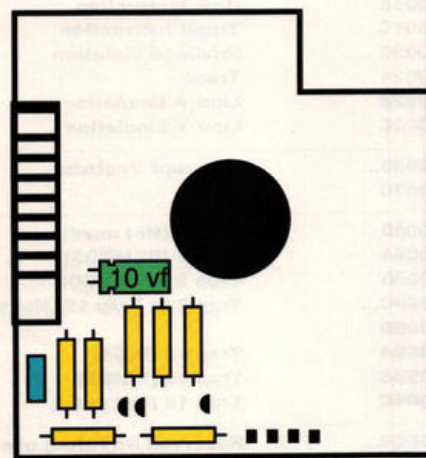


= 10vF capacitor



= 104K100 (0.1vF) polyester capacitor; change to 103K100 (0.01vF) capacitor

QUICK-SHOT 1



= resistors

= transistors

on each 256K jumper must be connected, and the solder blob removed from the pads marked 1M.

Sadly, you can't upgrade any TOS 1.0, 1.2 or 1.4 STs to TOS 1.6. This version is designed for the STE, and the additional STE routines won't work on the older models, because the new hardware is missing.

Likewise, you can't downgrade an STE to run older TOS versions in order to regain compatibility.

You can order TOS upgrade kits through a variety of sources including Silica Shop (☎ 081 309 1111), Ladbroke Computing (☎ 0772 203166) and other ST specialists for around £40.

20 THINGS WHICH GO THROUGH YOUR ST'S MIND WHEN IT WAKES UP

1. Turn on Supervisor Mode and set Interrupt Level 7.
2. Is there a Diagnostic Cartridge plugged in? Jump to it if there is.
3. Is the memory setup valid? If so, leave it alone.
4. What about the RESET vector? If it's valid (that is, a warm start) then jump to it.
5. Initialise the floppy drive(s), the RS232 and the printer port.
6. Check to see if the TOS is the PAL or NTSC version and set the correct display sync mode.
7. Set up the default colour palette and the default video RAM address.
8. Find out how much RAM exists and set up the memory configuration. I could be a 520, 1040, 2MByte or 4MByte machine.
9. Clear the screen.
10. Set up the system variables and vectors in the

Protected RAM area.

11. Check for a high resolution monitor plugged in and set up accordingly.
12. Set Interrupt level 3.
13. Check for a User cartridge plugged in. If there's a program there, run it.
14. Wake up GEMDOS
15. Find the default date in the ROM and set up the system date with it.
16. Can I boot from the floppy by executable boot-sector? If so, do it.
17. Can I boot from a hard drive? If so, do it instead.
18. Run any reset-resident programs.
19. Run any AUTO folder programs.
20. Go to GEMDOS and prepare the Desktop display and any Accessories and then loop until the user does something...

YOUR GUIDE TO YOUR ST'S INSIDES

HEXADECIMAL ADDRESSES	FUNCTION/USE	EXCEPTION VECTORS	PROTECTED MEMORY
000000... 000007	Initial Supervisor Stack Pointer Initial Program Counter		
000008 00000C 000010 000014 000018 00001C 000020 000024 000028 00002C	Bus Error Address Error Illegal Instruction Divide by Zero CHK Instruction TrapV Instruction Privilege Violation Trace Line_A Emulation Line_F Emulation	TRAP VECTORS	
000030... 00007C	Interrupt Vectors		
000080 000084 000088 00008C... 0000B0 0000B4 0000B8 0000BC	Trap 0 (Not used) Trap 1 (GEMDOS) Trap 2 (AES & VDI) Trap 3 to Trap 12 (Not used) Trap 13 (BIOS) Trap 14 (XBIOS) Trap 15 (Not used)		
0000C0... 0000FF	Reserved for future use		
000100... 0003FF	Additional MFP interrupt vectors		
000400... 000515	System Variables		
000516... 0007FF	Empty RAM, all STs		
000800... 07FFFF	RAM space 520ST		RAM
080000... 0FFFFF	RAM space 1040ST		
100000... 1FFFFF	RAM space MEGA ST2		
1FFFFF... 3FFFFF	RAM space MEGA ST4		
FA0000... FBFFFF	Cartridge memory space		ROM
FC0000... FF7FFF	ROM area		
FF8004	MMU register		DEVICES
FF8201... FF8260	Video Shifter registers		
FF8400	Reserved for future use		
FF8600... FF860D	DMA registers		
FF8800... FF8802	PSG registers		
FF8A00... FF8A3D	Blitter registers		
FFFA01... FFFA2F	MFP registers		
FFFC00... FFFC06	ACIA registers		

EXCEPTION VECTORS

Each "vector" is a group of four bytes (in programming terms this is known as a longword). These can be used as memory addresses. Many of the vectors contain the address locations of error handlers or interrupt routines which are stored in the ST's ROM. When an exception occurs (caused by an address error, for example) the address is transferred into the processor's PC (or program counter). This makes the processor jump immediately to the address and begins executing the program which it finds there.

INTERRUPT VECTORS

A subsection of the exception vectors, these are the vectors most regularly used by your ST. The video display system generates an interrupt every fiftieth of a second. This tells the processor that the bottom of the display frame has been reached and the TV's beam is switching off and returning to the top. The interrupt makes the processor look here to find the address of the Vertical Blank (VBL) routine in the ROM. This updates the frame counter, checks to see if the colours or resolution have been changed and tells the video system where the screen memory is located for the next frame.

Depending on the interrupt signal the processor receives, different vectors are used. They are prioritised, so that some interrupt signals can be ignored. The first level interrupt is the Horizontal Blank (HBL) vector, and this is usually disabled. The highest interrupt level is 7, the Non Maskable Interrupt (NMI) and this cannot be ignored by the processor. The normal interrupt level is 3, which allows VBLs and anything higher to work, but stops HBLs and lower level interrupts.

TRAP VECTORS

These also form a subsection of the exception vectors, but differ from the interrupt vectors in that they are caused by a machine code instruction rather than a hard-wired interrupt signal. The instruction TRAP, followed by the Trap number (0 to 15) causes the processor to copy the corresponding Trap vector's contents to the PC (just like all the other automatic exceptions). The processor then executes the program stored there.

The ST makes extensive use of just four trap vectors:

Trap 1 - the GEMDOS (Graphic Environment Manager and Disk Operating System) program, which handles the interfacing between you and the ST's hardware drivers;

Trap 2 - the AES (Applications Environment Services) and the VDI (Virtual Device Interface). The AES handles the ST's GEM inputs (things like window updating, menu selections and dialogue boxes). The VDI, by contrast, deals with the GEM's outputs, like pixel-plotting, fill patterns and colours; Trap 13 - the BIOS (Basic Input/Output System), which handles tasks requiring input from or output to the devices con-

nected to your ST. The BIOS handles 11 main functions, which include reading and writing to any device, keeping a map of the memory currently in use by the ST, and checking to see if the disk has been changed;

Trap 14 - the XBIOS (Extended BIOS) which handles the actual hardware devices like the drives, the keyboard processor and all the ports. It can set up each device and monitor it for input and output which it receives from (or sends back to) GEMDOS, via the BIOS. Why? GEMDOS is part of a transportable operating system (you can also find it on IBM PCs which makes it easy to swap code between both machines), as is the BIOS. The XBIOS is the only bit which "knows" how the ST is wired up differently to the IBM, and deals with it directly.

PROTECTED MEMORY

This entire area of memory can only be written to when the processor is in Supervisor mode. Any attempt to write to it in User mode causes a Privilege Violation exception to be generated. This is because the whole area is the ST's main scratchpad, used for keeping track of important system details.

RAM

Depending on the particular ST model you have, RAM may or may not be available at these addresses. The uppermost number in each band is the top of physical RAM, and the addresses in between this and the start of the ROM are unavailable. If you try to write directly to a nonexistent address in this area a Bus Error exception is always generated.

CARTRIDGE MEMORY SPACE

If you have a cartridge inserted into your ST, then there is ROM available at these addresses. The program in this ROM depends entirely on the cartridge used.

ROM

This is the very heart of your ST. The ROM contains all the programs required to keep you and your system talking happily to each other. The BIOS, XBIOS, AES, VDI and GEMDOS programs and functions are all stored right here.

When you power up your ST, the processor is guided straight here by the first eight bytes of memory to begin the main operating system initialisation.

HARDWARE DEVICE REGISTERS

This area of memory enables the processor to communicate with the internal devices. At certain addresses the processor is directly connected to other powerful chips instead of RAM or ROM. Each device has a number of control and data registers which may need setting up prior to their operation. The processor simply writes to or reads from these memory addresses, and the device connected to each address interprets, sends or processes the data at its end of the connection.



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➔ GFA BASIC PROGRAMMER'S SURGERY

One of GFA Basic's strong points is its disk accessing functions – but making the most of them can be tricky. Barrie Capel explains all.

As I mentioned last month, a lot of letters we receive are about reading and writing files to disk. Since there are so many ways to do it with GFA Basic, this month's Surgery is dedicated to the subject.

DISK ACCESS

Most programs either load data from disk or save data to disk at some point – but with the various methods GFA offers, which do you choose and why should it matter?

GFA Basic v2 provides the following I/O (Input/Output) commands associated with reading from or writing to disk files: **BLOAD**, **BSAVE**, **BGET** #n, **BPUT** #n, **CLOSE** #n, **GET** #n, **INP**(#n), **INPUT** #n, **LINE INPUT** #n, **OPEN** #n, **OUT** #n, **PRINT** #n, **PUT** #n, and **WRITE** #n. Then there are the following additional disk-related commands: **CHDIR**, **CHDRIVE**, **DFREE**(), **DIR**(), **DIR**, **LOF**(#n), **EOF**(#n), **EXEC**, **EXIST**, **FIELD**, **FILES**, **FILESELECT**, **KILL**, **MKDIR**, **NAME**, **RELSEEK** #n, **RMDIR**, and **SEEK** #n. GFA Basic v3 has even more...

One difference between the various I/O commands is speed – some are much faster than others. Another is that some commands only deal with one block of data at a time (but very quickly), where others require you to open a "pipeline" to the disk file, after which everything sent down the "pipe" goes into the file until the "pipeline" is closed.

So, in effect, all file access commands are one of two types:

1. Block Input/Output commands – filename is included as a parameter.
2. Pipeline commands – a channel is opened before the command is used and closed again afterwards.

Note that Block input/output commands produce Sequential files only, while Pipeline commands can be used to produce Sequential or Random Access files.

1. Block Input/Output

– **BLOAD**/**BSAVE**

Syntax: **BSAVE** "filename", a, n

BLOAD "filename", a

where a = the address of the block to save/load, and n = the number of bytes to save/load.

Notice that **BLOAD** does not need the block length parameter, because the command just loads the lot into the destination specified by a.

A problem frequently encountered is the ST locking up during a **BLOAD**. 99 times out of 100, this is due to the specified destination not existing. If you want to **BLOAD** data from disk into a string, then the string must exist, and it must be the length required to store the data being loaded. The string can be created with the **SPACE\$** command, and if the data is of unknown size you can find out what it is with GFA's **LOF**(#n) function.

If you are saving and specify a filename that already exists then the existing file is completely overwritten without warning, so any existing data must be loaded first, added to or amended in the ST's memory, then saved back to disk.

The GFA command **EXIST**(filename) is used to check if a given filename is on the disk already, returning -1 if it is and 0 if it isn't. If it doesn't already exist then **BSAVE** creates a new file.

Using these commands, data can only be loaded

from the start of the file to the end. Partial loading of files is not possible, although once the data is loaded you can cut it up to your heart's content! These commands are useful for saving/loading blocks of memory, such as the current colour palette or string data. There are separate commands for loading and saving, and they're fast. Consider these examples:

(a) BSAVE

Let's assume you have something in memory you want to store on disk. It could be the 32K screen area or the contents of a variable – it doesn't matter. All you need to know is where the data is and how much you want to save.

BSAVE "A:TEST1.DAT", **XBIOS**(2), 32000 creates a file called **TEST1.DAT** on drive A: containing 32,000 bytes of the ST's memory (the screen) starting at **XBIOS**(2) – the start of screen memory.

BSAVE "A:TEST2.DAT", **VARPTR**(A\$), **LEN**(A\$) creates a file called **TEST2.DAT** on drive A: containing whatever was in the variable A\$. In this command **VARPTR**(A\$) returns the address in memory of A\$, and **LEN**(A\$) supplies the current length of A\$ in bytes.

BSAVE "B:TEST3.DAT", 0, 1024 creates a file called **TEST3.DAT** on drive B: containing the first 1,024 bytes (1K) of the ST's memory.

(b) BLOAD

To load an unknown sized block off disk into A\$, you would use:

```
OPEN "I", #1, "A:TEST2.DAT"      !Open the file
L=LOF(#1)                        !How many bytes
                                  !long is it?
CLOSE (#1)                       !Close the file
A$=SPACE$(L)                     !Create empty
                                  !string L bytes
                                  !long
BLOAD "filename", Varptr(A$), L   !Zap it into
                                  !memory!
```

2. Pipeline commands

These are used when more than one piece of data has to be saved to the same file. A channel has to be opened first with the **OPEN** command, and all output to that channel is written onto the disk in the filename specified until you use the **CLOSE** command. Each block of data is tagged on at the end of the file.

This means that you can send to the same disk file the contents of string variables A\$, B\$, C\$ and then the numeric variable "score" before closing the file, and they all remain separate entities within the file. String data can be read back into any named string variable, so you could save the contents of the variable **partnumber\$** but load it back into **pn\$**.

String and numeric variables can also be freely mixed when outputting to the file as long as the data is read back in using the correct variable types, and in the same order as when saved. This is useful because you can make the first data item in a disk file the value corresponding to the number of string data items to follow. When loading back in, this number is read first and used to calculate how many items have to be loaded.

The order in which you save data determines what your program is compatible with. If you use the same format as other programs, then your programs are more likely to be used, since people can use their existing files with your programs. If you don't, then you create yet another format.

For example, an ST screen is always 32K, but if you want to write a paint program that can load all other paint programs' pictures, just think about how

many different picture load routines you need to include! On machines like the Apple Mac, this problem rarely occurs because programmers tend to stick to standard formats. Bear this in mind...

Data is normally loaded in from the start of the file to the end, but special commands like **SEEK** can also be used to load and save data from any point in the file. Since the same **OPEN** command is used whether you are loading or saving, you need a way to state which you want, so part of the **OPEN** command is a "flow" parameter, which can be "O" for output, "I" for input, "A" for Append, "U" for reading and writing (Universal?) or "R" for Random Access. Normally, you only ever use I and O.

- Using "O" creates a new file, or overwrite from the start of the old file if it already exists – it's your responsibility to check if it does or not!

- Using "I" opens an existing file for input only – otherwise a "file not found" error occurs.

- Using "A" opens an existing file for appending where the data being saved is to be written starting at the end of the file. Otherwise, a "file not found" error.

- Using "U" opens an existing file for reading and writing. Data can be loaded or saved by using the relevant command without closing and issuing another **OPEN** command. Not used very often.

- "R" is used to create a new Random Access file – see panel.

The OPEN commands give you more flexibility when loading data, but in most cases the price to pay is speed, since the process tends to rely heavily on the use of loops in your programs to read/write the data when the file has been opened.

```
BGET #n, BPUT #n, GET#, INP(#n),
INPUT #n, LINE INPUT #n, OUT #n, PRINT
#n, PUT #n, and WRITE #n all need a file opened
before use. The # sign means "channel" and n can
be 0-99.
```

Once a channel has been opened with "O" for output, it just sits there bothering no-one, just waiting for data (when you issue a command which uses #n), so your program can go about doing what it needs to. If the "n" corresponds to the channel currently open, it takes the data and puts it on the end of the file on disk. All files must be closed after they are finished with and re-opened with the "flow" parameter to "I" to input the data.

- **BPUT** is in effect the same as **BSAVE**, only it

GET INTO IT!

Data files on disk can be either sequential or random access, but what's the difference?

- **Sequential** When you save data on disk, it is normally saved sequentially as a continuous block. Commands such as **SEEK** and **RELSEEK** can be made to point to any part of the file before loading or saving, but when saving to an existing file the new data overwrites everything after the declared start position.

- **Random Access** With Random Access files, each block of data (**RECORD**) to be loaded or saved is treated as a separate entity with a layout consisting of a number of fields, defined by you with the **FIELD** command. Using an index, GFA Basic knows exactly where each record starts on the disk and how long it is, so records can be saved to and loaded from anywhere inside the file at random – you can even save records between other records! The drawback is that searching on disk can be slower than in memory. Maybe an article on Random Access in the Surgery at a later date if enough of you want one?

needs the **OPEN** command used with "O" first. More than one **BPUT** can be carried out with the same file before closing. **BGET** is the reverse and loads back in provided you open the channel with "I".

● **GET #n** and **PUT #n** are used with Random Access files to load individual records and are not used for general purpose data I/O.

● **PRINT #n** is the same as **PRINT**, only the output is to the disk file. You must have already used the **OPEN** command and opened the channel you want to use by specifying an "O". If you want to send lists of items to the disk then make sure you separate them using commas. Numeric values or strings in either variable form or quotes can be saved, and each item is saved with a carriage return on the end of the data. To load the information back in again, just use the **INPUT #n** command.

● **WRITE #n** is the same as **PRINT #n** and the channel must have been opened with "O". Loading back in is also by the use of **INPUT #n**.

● **OUT #n** writes a single byte of information out to the disk file opened with "O". That is, it sends an ASCII character value or number between the limits of 0 and 255.

● **INPUT #n** enables you to get string and numeric data saved with **PRINT #n** and **WRITE #n** back into the ST. The channel must have been opened with "I".

● **LINE INPUT #n** is the same as **INPUT #n**, but can only load string data and not numeric data.

● **INP(#n)** enables you to get the byte of data saved with **OUT #n** back into the ST. The channel must have been opened with "I".

An example "Pipeline" listings:

' Listing 1 - CREATE 'N SAVE

CLS

INPUT "Type a title for the database ";title\$

```
INPUT "How many names ";names
DIM data$(names)
FOR n%=1 TO names
PRINT "Data Item ";n%;" Of ";names;":":INPUT
data$(n%)
NEXT n%
FOR n%=1 TO 50
PCIRCLE INT(RND(0)*300),INT(RND(0)*190),20
NEXT n%
GET 100,100,150,150,cut$
L=LEN(cut$)
'
OPEN "O", #1, "A:\SURGERY.DAT"
WRITE #1,names
FOR n%=1 TO names
PRINT #1,data$(n%)
NEXT n%
WRITE #1,L
BPUT #1,cut$
CLOSE #1
'
```

```
' LOAD 'N SHOW
CLS
OPEN "I", #1, "A:\SURGERY.DAT"
INPUT #1,names
FOR n%=1 TO names
INPUT #1,data$(n%)
NEXT n%
INPUT #1,L
cut$=SPACE$(L)
BGET #1,VARPTR(cut$),L
CLOSE #1
```

```
FOR n%=1 TO names
PRINT data$(n%)
NEXT n%
PUT 100,100,cut$
DO
LOOP
```

SEEK AND RELSEEK

When you use **OPEN** and load data in, the system needs to know where in the file the last byte was read from - otherwise, the next default input command wouldn't know where to start reading from. So something called a "Data Pointer" is used. The Data Pointer always points at the next byte to be loaded, but with **SEEK** and **RELSEEK** you can have full control over this pointer and in effect tell the Data Pointer where to point. For example, **SEEK #1, 240** causes the pointer to move to the 240th byte in the open file. The next time you read a byte using any of the data input commands, you start at the 240th byte regardless of where the last command left the Data Pointer.

On the other hand, **RELSEEK** or Relative **SEEK** moves the Data Pointer relative to its current position. For instance, **RELSEEK #1, 240** causes the next input command to start loading from the file 240 bytes on from the current position.

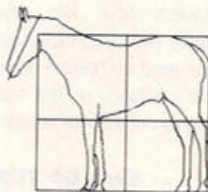
There is a small but important difference: **SEEK #1,x** moves to position "x" in the file, and **RELSEEK #1,x** moves the pointer along "x" bytes.

To summarise: if you want to save a single block of data - say, graphics - and you know the block's size, then just use **BSAVE** and **BLOAD**. If you want to save more than one piece of data in the same file or need to load/save the contents of arrays, then you have to **OPEN** a file and use loops to read the information in.

● Well, that's Input/Output as simply as I can explain it. If you have any specific I/O problems not covered clearly enough here, write to me at GFA Programmer's Surgery, ST FORMAT, 30 Monmouth Street, Bath, Avon BA1 2BW. Remember, I can't reply to you personally, and please be patient if your query isn't answered here immediately. It's impossible to cover everything at once - but be here next issue: your letter may have reached the top of the pile!

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SHORT BUT SWEET

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■ Please could you tell me which leads I need to connect my STE to my Hi-fi for stereo output.

Adam Farrell
Lancashire

– Check out this month's special offers on page 118 for the Stereo Soundblaster. This device amplifies the output from either an ST or STE and pumps it out through two speakers. Alternatively, speak to your local Atari dealer for a lead or call Silica Shop on 081 309 1111.

■ Does Timeworks DTP work with a Panasonic KXP-1123 printer? If it doesn't, where can I get a suitable printer driver for Timeworks? Is there a driver for the KXP 1123 to be used with ST Writer Elite in PD?

Dermott Flynn
Co Antrim

– Timeworks DTP certainly supports the Panasonic KXP-1123. The Panasonic is an Epson compatible printer, so it works with ST Writer without trouble. (The latest version of that excellent word processor is on this issue's Cover Disk, by the way, so you can try it out straight away! See the Cover Disk pages, beginning page 22, for how to get going.) If you have difficulty obtaining a suitable printer driver, get in contact with the SouthWest Software Library, who should be able to supply you with an appropriate driver. You can write to them at PO Box 562, Wimborne, Dorset BH21 2YD. Many other PD libraries sell printer drivers for a wide range of unusual printers – just scour our PD directory, page 50.

■ I bought Novagen's Damocles about three months ago and my friend said that a Damocles 2 is coming out. Please could you tell me when it is due?

Martin Paton
Manchester

– We've spoken to Novagen and they assure us that Damocles 2 (or Mercenary 3, as it's also being known) is due

to be released towards the end of October.

■ I am considering buying a Canon BJ-10e Bubblejet printer and I would be grateful if you could help me with a couple of questions. First, is there a GDOS driver for the printer available yet? And second, when printing from such programs as Timeworks will the bubblejet give true 360 dpi text or will it just give better quality chunky text?

James R Scott
Oxon

– Inkjet printers are a relatively new addition to the affordable printer range. The method they use to print means they aren't compatible with the standard Epson control codes, so specific printer drivers are essential if you intend to do any kind of graphics work. Timeworks DTP as yet doesn't support the Canon Bubblejet but Atari are known to be working on a driver, expected for release before Christmas. Give them a call on 0753 533344 if you want further details. Additionally, The SouthWest Software PD library takes a great interest in printer drivers and they may write one specifically for you if you explain your problem. Write to PO Box 562, Wimborne, Dorset BH21 2YD.

■ I would like to know if there's a cheap package which would enable me to print out music scores from the ST. I know there are scoring features in packages like Cubase but this is wildly out of my price range and it's bursting with features I'm not particularly keen on using.

Richard Caudell
Yorkshire

– We have a special music scoring feature lined up for our December issue. This will reveal all the packages available for your ST and look at how to use them to get the effect you need. Several of the larger companies are working on updated versions of their packages and these will all be covered in the feature.

BETTER LATE THAN WRONG

Why do you review games months after other magazines? You've been complaining about how long Midwinter 2 has taken to be released but other magazines reviewed it months ago.

Jim Stockton
Warrington, Surrey

stf Take a look through other magazines, Jim, and you can find reviews of Midwinter 2 which date back as far as March. It is our policy to review only completely finished games. Since programming team Maelstrom only completed Midwinter 2 days before we received it here in the office, it makes you wonder what these other magazines reviewed.

Software publishers inevitably want the magazine reviews to hit the streets at the same time as their game. Unfortunately, because magazines must be written several weeks before they appear on the shelves, this often means publishers want us to review unfinished games. It's not uncommon to find that a game doesn't have any sound, or is still on hard drive only or certain key events are missing. To review a game under these circumstances is unfair on you so we always insist on seeing a completed version. If lesser magazines choose to review games before they're finished then that's up to them, but we put our readers first. We never forget that you're the ones who buy the games and you need an honest opinion of the game that's actually on the shelves before you splash out £25 or more.

END OF TERMS?

A series of articles to introduce beginners to the serious side of the ST would mean that there was no need for the endless boxes explaining such elementary terms as MIDI, GEM, TOS and the like, leaving more room for in-depth articles on serious subjects such as Mac emulation, etc.

Jon Nott
Devon

stf Our reviews must appeal to ST owners at all levels, beginner and experienced alike. Every month a host of new owners buy ST FORMAT for the first time – our rising circulation figures reflect that. If we run a series of articles for beginners in, say, October, then what about all the newcomers who get

their STs at Christmas? Are they to suffer a year's worth of techno-babble until they get a beginners' series? Surely not.

At the same time, why should an experienced ST owner who's forgotten what a specific term means have to refer back through countless issues to find an explanation? ST FORMAT wants to give you the full picture, whenever and wherever it's relevant. And as you must have noticed from our virus feature last month and the emulators feature in issue 25, we're managing to squeeze in the in-depth features as well – and as you'd expect, we'll explain the jargon in those too.

THE MONKEY PUZZLE

I am writing to complain about a very nasty bug which has appeared in The Secret Of Monkey Island. It appears when you have completed all the tasks set by the important looking pirates on Melée Island. After you talk to the Swordmaster and Meathook and free the prisoner this bug appears.

You are told to get a crew together and buy a boat. You have to go to Stan's Previously Owned Vessel Emporium to buy the boat. You walk all the way there, only to find that you are dead, or 41 Heap Full – Game Over. Why? How could Lucasfilm's testers miss out something as important as that and also you who reviewed the game? I have tried all sorts of combinations suggested on US Gold's help line to complete the task of getting the ship, but the suggestions do not work.

What is the point of doing The Secret Of Monkey Island 2 when the first is full of bugs?

Declan Fitzpatrick
Bath

stf We phoned US Gold and spoke to Danielle Woodyatt, their Marketing Manager. She explained that the very earliest versions of Monkey Island did indeed have a programming fault. "Lucasfilm are very concerned about this," she explained, "and we've been asked to do everything we can to make amends." Danielle then went on to explain that if you've been affected by this fault, just return your copy of Monkey Island to US Gold, Units 2/3 Holford Way, Holford, Birmingham B6 7AX.

They'll send you a corrected version, plus another Lucasfilm game absolutely free to make up for your

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this too. Watch this space... Oh! But a final note. If you're still playing an unpaid-for version of Llamatron, you're a complete skinflint!

PEACEFUL DEMONSTRATION?

I am writing to complain about the attitude you take towards demos and their creators. You seem to criticise demos quite a lot, and considering the demo crews who make them don't get paid for it, I don't think you have any right to criticise them. Okay, constructive criticism I don't mind – after all, it can only help the coders to do better next time – but when you complain about greetings, balls and demos all using the same music over and over again then I don't think that's fair.

I don't see anything wrong with saying hello to your friends, and I for one like balls (the bitmapped kind!). I doubt that any of the ST FORMAT demo reviewers could do a ball demo at all, so who are they to criticise? And as for the same music, come on, demo coders aren't making any money from demos so how can they afford to hire a musician to do the music? I also think that you see demo coders as amateurs.

Demo coders are getting better, achieving the impossible time after time while game coders are producing shit which some companies call "games." More and more demo coders are starting to code games now – *Enchanted Lands*, for example. This is certainly the

best platform game on the ST, and not surprisingly, written by The Carebears, the best demo crew on the ST. I rest my case.

Anon

stf No unbiased reader could ever accuse ST FORMAT of not supporting demo writers. We've reviewed countless demos and only some of them have been brilliant. We refuse to tar all demo creators with the same brush, but it has to be said that some are more adventurous/creative/humorous/exciting than others. What's the attraction in paying three quid for a PD disk which contains cruddy music, boring graphics and a screenful of abusive or illiterate messages to people you've never heard of? Okay, so the coders get paid zilch, but that's usually because they're learning their art and developing it as they go. You wouldn't expect to be paid for the essays you wrote at school, would you?

As for the qualifications required to review demos, what do you expect? Could Barry Norman make a film? Could Mike Read make a record (a good one)? As it happens, most of the FORMAT crew are quite capable of holding their own in the bouncing ball department. Our Tech Ed, Neil Jackson, previously produced software for Activision, where he actually employed some demo-writers to create full-price games on the strength of the humour and attention to detail of one of their demos. Kinda

blows a hole in your case really, doesn't it? You wouldn't perchance be a disgruntled ball-bouncer who's had a less-than-rave review, would you?

IDENTITY CRISIS

I have seen DPaint advertised as DPaint, DPaint 2, DPaint v2 and DPaint v3, all for the Atari STE. Please help me. What is the difference? I thought there was only one DPaint.

Secondly, where can I get a printer driver for an HP Deskjet 500?

**The Imperial Aardvark
Hereford**

stf DPaint, or DeluxePaint to give it its full name, is currently only available in one guise for the ST and STE (£49.99, Electronic Arts ☎ 0753 549442). However, there are four versions available for the Commodore Amiga games machine and the PC word processor. This is probably what's caused the confusion. We contacted Electronic Arts and they said that they are working on version 2 for the ST, which we should see in 1992.

As for the printer driver, it largely depends on what software you want to use the driver with. Try the Public Sector Library (who are, like you, based in Hereford) on 0438 364722 or 361324 and tell 'em we sent ya!

TINTS, HIPS, TEATS AND CHIPS

I have been buying ST FORMAT for over a year and a half. I have collected hundreds of different hints and tips from your Gamebusters section. But when I come to use one of these cheats it takes me quite a while searching through all my old ST FORMATS to find the cheat I want to use. I was wondering if you have any plans to produce an Encyclopaedia of all the hints, tips and cheats ever published in your great magazine?

But, I do have one complaint about your great magazine. It is that over the last couple of months you have been giving people £50 for sending in loads of cheats, when most of them have already been published in ST FORMAT. I don't think it's fair that someone has got £50 just for copying out old cheats from old magazines.

**Chris Preston
West Midlands**

stf Yes, there are plans to print a Gamebusters mammoth tome, we hope before Christmas. Watch for details in future issues.

We admit it is sometimes difficult to decide on the Gamebusters prizewinner. We often give the dosh to people who come up with some hot tips on really new games or extensive playing guides to a single game, but short tips are the backbone of the section and we want you to keep them rolling in. A great many tips are for old games and it

would be unfeasible to cross reference every single issue to see if they appeared earlier. If we do sometimes let a few repeat tips slip through, we hope you'll take pity on our workload and think of it as a special bonus for newer ST game-players than you. If you think you've got one we haven't seen before, send it in! Now there's a challenge for you.

FASTER THAN A SPEEDING BULLET

After finishing your excellent demo of Gods and reading the extensive review in the May issue, I eagerly rushed out to my nearest stockist and bought a copy of the game.

Since I am only 15 and don't have a steady flow of ready cash, I choose my games carefully. I totally agree with your interpretation of Gods – it is worth a FORMAT Gold award. But within a week's play of Gods I had completed the game. Surely at £25.95 this can't be value for money.

This isn't my only experience. Two other games of mine were also easily finished. The first, *Robocop*, was completed within a week and the other, *Batman*, was completed within two weeks. Now I've only had my ST since Christmas and I wouldn't consider myself a hardened gamer.

On these particular results I have decided to go for more lengthy, extensive games such as *Midwinter*. Why can't games have a high level of gameplay and lastability?

**Eamon Hartan
Derry, Northern Ireland**

stf Crikey, you've been busy, haven't you? While it's possible that some inherently able people like yourself can complete tough games in record time, most of us get stuck for ages. Gods especially was one which gave the FORMAT crew hours of frustration and self-torture before we finally all went completely mad. Give yourself a big pat on the back and make yourself a badge which says "I've got the metabolic rate of a cheetah!" to wear with pride. Seriously, though, why don't you write to the software houses concerned and let them know just how quickly you finished their games? Most companies would be glad to have a bit of constructive feedback, especially on the subject of gameplay, which is often the hardest part of a game to judge. Perhaps your comments could help get the balance right for future releases.

PRINTER OUT

I was pleased to see you taking an interest in colour printing, but surprised to see no mention of the Integrex 132 in your review, a printer now well established in schools. Being an inkjet, it offers many advantages over colour dot matrix printers, but is admittedly rather poor when it comes to text output. The

LET'S GET TOGETHER...

Assembler tutorial 1

It's not often I have a moan about your mag, but once I get going it's hard to stop me. My gripe is your assembler tutorial. Since I bought my oh-so-wonderful ST I've had STOS and over the months I've put a few routines and games together. Recently, I've decided I need something more powerful, so I turned to your assembler tutorial.

Unfortunately, apart from providing me with an assembler, it was no use to me. All it proved was that the Bullfrogs could program in assembler. The game was theirs, not mine. I have got a book from my local library to help me learn the comments, but I am stuck when it comes to writing games.

**Ben Pritchard
Hertfordshire**

Assembler tutorial 2

Congratulations on the best series of programming articles I've seen in a computer magazine – namely

Bullfrog's assembler series. Rather than just giving basic assembler coding, it also gives an insight into the production of fast coding techniques needed for a budding games programmer. It also provides some very useful code to get you started without resorting to lengthy explanations.

Now (after the sweet talk), how about following up this series in the only real way possible, namely getting someone like Paul Damocles Woakes to provide a similar series on producing fast 3D graphics which at least approach commercial quality? After all, let's face it, current publications for the ST give a great deal of 3D theory but the coding is rather slow and not too useful for a quality game.

Even if you can't manage this, at least try to keep up the good work by producing further similar series which provide an insight to good coding techniques and you'll have at

least one lifelong reader.

**Dave Woollen
Sheffield**

stf You can't please all the readers all the time. Now that the Bullfrog programming series has come to an end I intend to start running regular tips pages to answer your queries about assembly language. That way, readers who have taken up assembly programming – and people like you, Ben – can ask for precisely the facts you need.

It's certainly my aim to get more professional programmers writing a regular series for the magazine, but I'm not convinced that games programmers are necessarily the ones to opt for. Programmers of databases, word processors or DTP packages have enlightening things to say. If anyone has any strong ideas on who should be writing the next STF programming tutorial, or the coding language we should be looking at, then drop us a line.

→ colour output of the Integrex is brighter and more even than that of a dot matrix, handling large flat areas of colour very well and eliminating the need to avoid dark backgrounds. Hard-copy is also produced in a fraction of the time, something which is much appreciated if more than an occasional copy is required.

I should, perhaps, declare an interest, having produced software for this printer over several years.

John Phillips
London SW4

stf There are a handful of printers that we deliberately left out of the roundup either because they weren't compatible with the ST or because we didn't consider them to be popular or of a competitive standard to warrant a review. By your own admission the Integrex 132 is poor at handling text output, which is certainly the most important specification for any printer.

If you're interested in finding out more about the Integrex 132, give Integrex a call on 0283 551551. The 132 currently has a price tag of £636.

BUYER SEEKS GUIDANCE

I currently have access to an Atari 520ST. I'm looking to add a printer and, if necessary, a hard drive and whatever else may be necessary – such as a wordprocessor, disk management, mailmerge, database, spelling checker – to enable me to print a newsletter for between 300 and 500 people and to retain information other than purely a name and address. I want to allow for expansion later (possibly to 10,000 newsletters!) and possibly to include the printing of posters.

Obviously my budget is not endless but your advice and suggestions within a limit of, say, £1,000 initially (but preferably less) and with the possibility of expanding the system in the future, as needs arise, would be very greatly appreciated.

G F Hoskin
Essex

stf To run a newsletter which looks half way professional you need to get your hands on a DTP package. Timeworks DTP is a cheap but sophisticated package (£90, Electric 0480 496789). Next on your shopping list should be a quality printer. Ideally you need a laser such as the Atari SLM605 because these are the fastest way to print DTP pages, though an inkjet like the Hewlett Packard Deskjet 500 (reviewed in issue 25) would be your best bet if you're tight on cash. The Hewlett Packard Deskjet is very well supported by ST software, so you wouldn't have any trouble printing out DTP pages. Later you could upgrade to PageStream 2 (£200, SoftLogik, 5 Chancery Lane, Clifford's Lane, London, EC4 1BU) and still use the same printer.

A hard drive certainly isn't essential, but once you start using one you'll wonder how you ever managed without it. DTP files can become very big and if you're looking to store several issues on hard drive you need a higher capacity. Go through this month's hard drive roundup beginning on page 54 to find the one which best suits your needs. One option might be to go for a removable hard drive, enabling you to extend your storage space by using extra storage cartridges.

As for software: ST FORMAT seems to have it all – next month we're running part two of our business software series (part one begins this month on page 102). Here we'll detail the available databases which can keep track of the information you mention.

In issue 22 we ran a desktop publishing special in which we spoke to people who built up their own fanzines – turn to page 136 to get your hands on that issue if you missed it. Most start off using a simple photocopier to reproduce their mags, but others now use full colour covers and are even professionally printed. Companies like SoftLogik are even pitting the ST against high-end publishing machines like the Apple Mac, so you're onto a winner with the ST. It can be an expensive process but the end result is always rewarding.

Keep us informed if you get the system up and running and don't forget to send us the first issue of your magazine for any future DTP articles we've got lined up.

IS THE PRICE RIGHT?

I feel that now the Atari ST range has established itself as a major force in the home micro/games marketplace, software houses should abandon their ridiculous IBM pricing policies and come back down to earth, for their sakes as well as their customers.

Certainly game design and complexity have evolved tremendously to take advantage of the capabilities of the Atari, and we all appreciate the hard work and dedication of the programmers who spend months working on their masterpieces. But, to be blunt, to expect someone to pay upwards of £25 for one game is ridiculous, especially in such a competitive marketplace, and when people just haven't got money to throw around any more. There is only one result of such high software prices – rampant piracy.

Software houses should take a leaf out of the video companies' books – they used to try and sell videos for between £40 and £75, so everyone went out and pirated copies. However, now that video companies sell titles for only a few pounds more than the price of a decent blank cassette, people mostly buy the originals, knowing that the recording will be better, the neat cover will look good in their collection, and they can take it back if it doesn't

work. Pretty as full-colour maps and manuals are, black and white pictures can be just as informative, but at the same time would help to bring the software cost down. If software houses would bring their prices down to, say, £10, they would sell a far greater volume, and have far less problem trying to combat piracy.

They would be happy – and we would be happy.

Simon Clarke
Cornwall

stf For a long time the software publishers have argued that by reducing the costs of a game they could not expect to achieve a noticeably higher proportion of sales. In addition, they maintain that the perceived value of a game plays an important role. If Midwinter 2 were to sell for just £10 it would have to be cramped into a small plastic case and the manual would need to be scaled down. Imagine seeing this on the shelves at Smith's amid games like MiG-29 in a massive cardboard box with bulky manuals and selling for £30. Which would you pick up first?

Recently, however, the ST charts have proved that games released at budget prices are selling vastly more than the full-price games. Now that all the major software publishers have established a budget label you can expect to see the vast majority of full-price games (certainly arcade and puzzle type games) appearing at a reduced rate later. There is now no excuse for pirating games – wait for them to be released on budget a couple of months later. Your film analogy, Simon, can be extended equally well to this. When Terminator 2 was released, I'm sure you raced off to the cinema to see it, paying upwards of £3.50 for the pleasure. However, you had the option to wait a couple of months for it to come out on video where you could see it for just £1. There's no excuse to go and get a pirated version in the meantime.

ANY START-UP PROGRAMS?

I'm thinking of starting a PD library later this year, but I'm unsure about several points. I'm hoping to start off the library in the evenings (then possibly go full-time), gradually starting up a specialist MIDI section (programs, sequences, demos of programs, etc), and in a year or two when I've got some capital and reputation behind me I would like to begin selling hardware. This would all be run from home for as long as possible. I would also like to offer other services such as scanning and MIDI sequencing, at some point.

I would like to know what the tax position is on a PD library. Do you have to charge tax on all your sales? If so would you have to keep a full financial system or would a program such as Double Sentry be sufficient to keep the VAT man happy? How is it worked out?

How do you register as a taxable outfit? Could I claim back VAT on any purchases for the Company? I know I would have to have a separate Business Account. Do you have to pay the Business Rates on a PD library run from home? I know I would if I was running a computer shop, but what if it was run from home?

I know you will say that there isn't a lot of money to be made in PD libraries, and those like Goodmans have been going for years, but since the PD-MIDI market is taking off now I think I could open up quite a good niche with my own personal enthusiasm in that area. I know it would be slow to start with, but I would start to get enquiries after advertising in magazines such as yours. I do not want to commit my entire life to PD (at least not yet), but I think that being enthusiastic about what you are actually doing gives you a much better reputation than anything else when running your own business.

Andrew Down
Somerset

stf Enthusiasm will certainly get you started, but what happens when you only get a couple of enquiries a month dropping on your doormat? Enthusiasm quickly wanes when no-one else shares your passion for PD. I'm not trying to deter you from running your own PD library, but you need to realise that there is intense competition in the PD world and unless you can offer something different and make people aware of what you're up to, you can't expect to get anywhere. If you can get your hands on original MIDI software – remember there are already many libraries selling MIDI files and related software – or offer some special MIDI services (perhaps you could offer to write drivers for any sequencer) then you would have a hook to make people come to you.

Take a look at our interview with Paul Glover from the ST Club in issue 25 (if you haven't got a copy, turn to page 136 now). He explains how he went about establishing his library and discusses the problems he encountered in the process. If you still want to go ahead, the best place to begin to find answers to your tax questions and similar matters is your own bank. Most High Street banks have a Small Business Advisor or something similar, who can at least direct you to the best place to ask next. **stf**

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The great *ST FORMAT* October quiz

Quickly, we haven't got much time. There's only three pages before the mag terminates and you'll be on the outside. You need to know the answers to the questions below, just in case a tall metallic policeman should ask you them in the street. Get them right and you might just win one of the fabulous prizes opposite. But get them wrong and you'll be – well, wrong. The silliest, most half-witted postcard wins a bag of piping hot iron filings and dip in our combined steel smelter and jacuzzi.

1 Which famous film star popped his clogs during the making of the world's most terrible movie, *Plan 9 from Outer Space*?

2 Name the author of the novel which was made into a computer game and video, both released this month.

3 What's the name of the technique for customising a standard letter by inserting names and addresses from a database?

4 Revenge is sweet, but naming this brand new games company is more likely to get you a correct answer.

5 On how many courses can you belt your dimpled balls in Microprose's excitingly named golf game, *Microprose Golf*?

6 What is FOD?

7 Which supposedly sensible artist is in fact as mad as a jackrabbit?

8 Which get executed first, the

AUTO folder programs or the Desk Accessories?

9 Which items make you invulnerable, rather than very sick, in *Rolling Ronny*?

10 What Public Domain demo features a guest appearance by the new, middle-aged and old Avenger, John Steed (AKA Patrick McNee)?

11 What's the highest score you (or more likely Steve Davis) can make in a single break of snooker?

12 Which two hot and sexy processors are Atari going to use in their future machines?

13 What are the two types of data file used in BASIC?

14 What heart condition is atropine used for in *Life & Death*?

15 Which doctor wrote the amazing PD word processor, *ST Writer Elite*, on the Cover Disk?

Come with me if you want to live. No, sorry. That should be "come with me if you want to win loads of smashing prizes and take part in the most exciting competition this month has ever seen." Doesn't quite have the same ring to it, does it?

16 Which German city hosts a top Atari show each autumn?

17 If you wanted to keep track of all the scores in an amateur football league, what kind of program would you use?

18 Which hat got chosen for my potato? Was it the feather cap, chef's hat, boater or trilby?

19 What film featured the clever but illegal use of a small, Atari-built personal organiser type-thingy? (Real toughie this 'un, I don't think)

20 If Sam Tramiel is the name of Atari US's Canadian head geezer, what's the name of Atari UK's Geordie boss?

Write your answers on the back of a massive gentleman by the name of Arnie, a postcard or envelope. Then send it to October Quizzings, *ST FORMAT*, 29 Monmouth Street, Bath, Avon BA1 2DL. All entries must arrive at our HQ before Friday 4 October – late arrivals will be melted down and used for scrap.

THE RULES BOX

1. All entries to this, the quiz of October, must verily arrive at our establishment before it is indeed too late. That is Friday, 4 October, no less.
2. Employees of Cyberline Systems, Future Publishing and Protar are all possessed of fast-access internal RAM databanks and are too smart to enter. Any relatives, genetic clones, or bio-mechanical cyborgs are also banned.
3. Sending one sentry (*surely that's "entry"*) through time and space is cool. Sending two or more is really a bit on the rude side. Do it and we'll show you what it's like to have an Uzi 9mm go off up your soft bits!
4. Just what you see, pal! You don't like our prizes? Don't enter! We can't give you cash instead – and that's assuming you win, already!
5. The decision of the judge, Mr LB Bach, is the decision. It is more final than the final fadeout, the end credits, or even the little bit of film that flaps about when the reel's run out, okay?

DON'T MISS THE ADDICTIVE MiG-29 SUPERFULCRUM ON NEXT MONTH'S COVER DISK

WIN! WIN! WIN!

After this month's mammoth hard drive round-up on page 54 we thought you might like to win this month's **FORMAT Gold** winner. As a result, we're giving away three Protar 30Mbyte hard drives worth almost £1000 – now what could be better than that?



Hard drives are one of the most useful hardware add-ons you can get your hands on – once you've used one you'll wonder how you ever managed without it. All serious software packages and an increasing number of games (including the forthcoming *Populous 2* previewed on page 40) can be installed on a hard drive so there's no need to go searching through your floppy disk collection for that missing package again.

The Protar hard-drive comes from Germany, where they pride themselves on producing top-notch hardware designed to last. Believe it or not, Protar actually test one in five of their components to make certain the drives are up to scratch. An

excellent manual and an easy installation process make the Protar one of the simplest hard drives to set up. Plus, this drive comes with superb utilities which enable you to add passwords and write-protection to different partitions on the drive.

Up to 12 partitions can be created on the Protar drive. Using a daisy-chaining port at the back of the drive you can also attach further hard drives to your ST (either from Protar or other manufacturers), giving you access to even more storage space. With a 64K RAM cache built into the Protar drive, it's capable of achieving some astounding speeds.

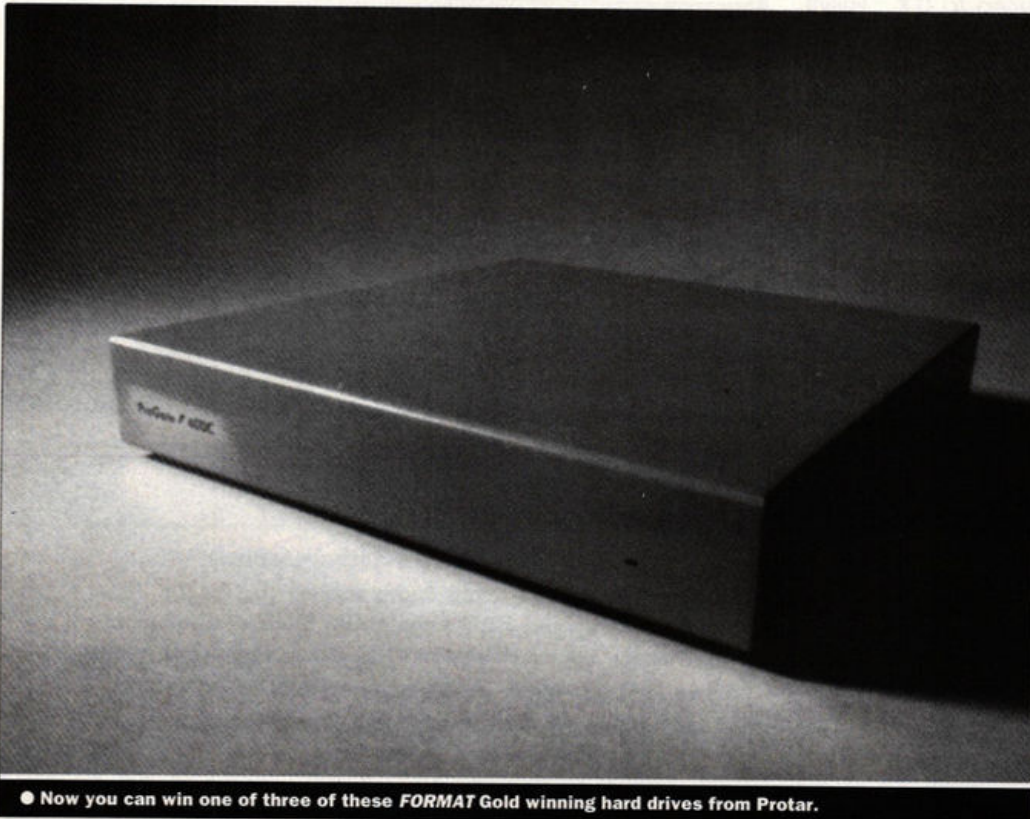
In addition, you don't need to worry too much about hard drive crashes. The Protar

is an auto-booting and auto-parking drive, so you don't need to park your heads whenever you want to move the drive around. Also, you can save all your partition data onto a floppy in the event that you need to recover information. If you're still concerned about the safety of your data, the drive comes with full de-bugging software to help you track down and then eliminate any potential problems.

Recently we've been hearing about hard drives which aren't compatible with certain types of STs. However, the Protar drive is perfectly in tune with all STs, enabling you to get the maximum possible benefit from this stylish drive.

What's more, although we're giving away the 30MByte version, the Protar drive comes in various sizes – from 20MBytes right up to 160MBytes – so no matter what your storage demands, there's a Protar hard drive to suit your needs.

To get your hands on one of these drives, just answer the 20 taxing questions on the opposite page.



● Now you can win one of three of these **FORMAT Gold** winning hard drives from Protar.

THE SEPTEMBER QUIZ

The prizes for last month's colossal quiz were a Supercharger PC emulator and a pack of *Chronos* and *Prism* graphics software. Did you win any of it? Find out next month. For now, read the answers and weep or whoop accordingly.

- 1 Bullfrog
- 2 Calligrapher
- 3 Just For Money
- 4 Cheetah light gun
- 5 Hunter
- 6 Bootsector
- 7 Ghost
- 8 Silica Shop
- 9 18K
- 10 Express Card
- 11 Graphics Device Operating System
- 12 Life and Death
- 13 CyberPaint
- 14 60%
- 15 Future Wars
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- 18 Infinitely
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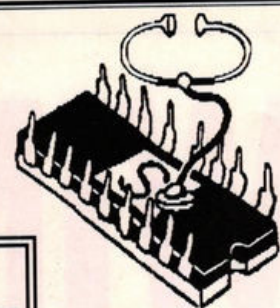
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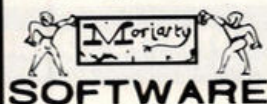
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Twilight zone

Out-takes, double-takes, pi - er, dairy flakes and home bakes

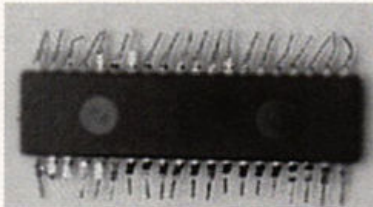
Silicon murder

It's with a weary heart and a sweaty eyebrow that we bring you some worrying news. An outbreak of silicon murder, so heinous that Ed "Ed" Ricketts fainted, has been perpetrated against an unsuspecting ST chip.

Remember the STE's infamous faulty DMA chip - the one which, as we first reported way back in issue 16, made some STEs incompatible with some hard drives? STF reader Justin Joanknecht has revealed that he got so frustrated with his STE's DMA chip that he ripped the poor little chap out of his socket and "twisted every one of his 40 little legs until he squealed and then I stamped him out of existence."

Er, that's all very well, Justin, but

we have some news which might well bring a tear to your eye. The chip you've so efficiently destroyed is actually a video shifter chip, not a DMA chip. So while you might feel a lot better for explaining (in pretty graphic terms) to your ST just who the boss is, your ST will be having the last laugh. Oh dear.



● Innocent video shifter, mistaken for a DMA chip, will never shift data again.

BIZARRE ATARI

STs pop up the strangest places, don't they? All manner of famous people are using them to keep their street cred. This month saw no less than three appearances of Uncle Sam's finest, in curious but obvious places.

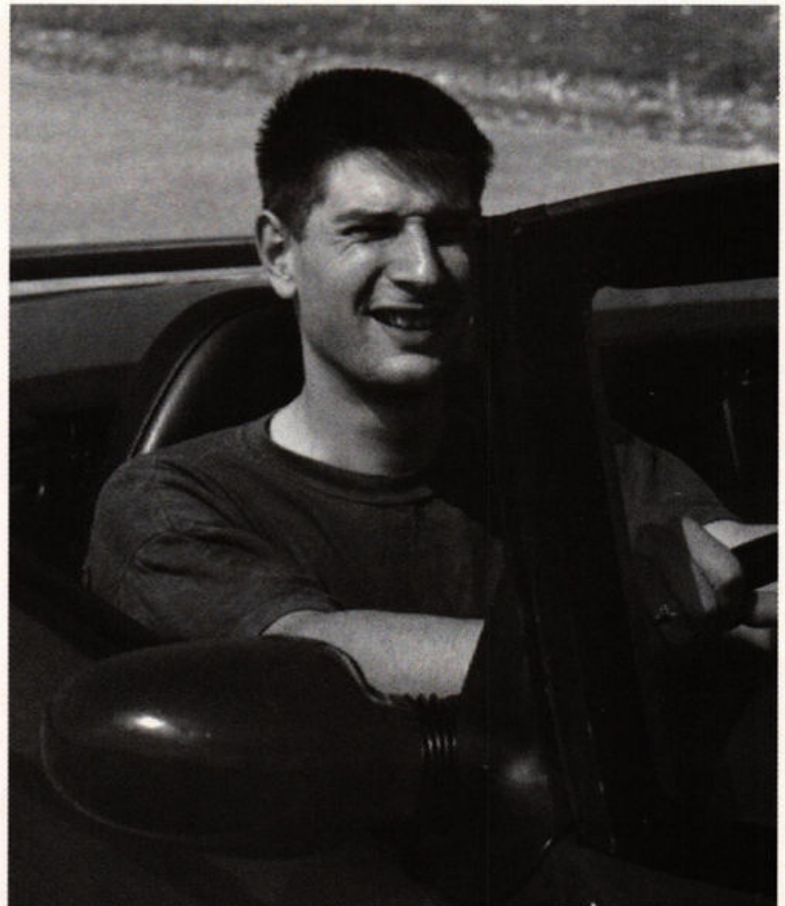
First prize, for the weirdest known public use of an ST, goes to Jean-Michel Jarre, music technician extraordinaire. In his show, he performs a jolly number by the name of "Waiting for Cousteau." Ambient it may be, but simple it isn't! The whole piece is the work of a Mega ST, allowed to run free with JMJ's favourite notes. The Mega combines musical notes using the fractal theory, in a program called AMI. It can be set up to provide hours of continuous music. Needless to say, we're trying to borrow a copy from him - strictly for research purposes, of course, you understand.

Second prize goes to Edward Furlong (the young John Connor of *Terminator 2* fame), for using the ST's little sister for nefarious purposes. You see him crack into cash dispensers and security systems armed with nothing more than a Portfolio, Atari's hand-held "personal organiser." But it only happens in the movies, right?

Finally, did anyone else notice the ST in *American Roulette*, starring Andy Garcia? Nope? It was there, in an office, but it was switched off. Anybody else spotted a celeb-ST recently? If so, try to get a photo and send it to Celeb-STs, ST FORMAT, 30 Monmouth Street, Bath, Avon BA1 2BW.

TEN EXCUSES TO USE ON YOUR MATES WHEN YOU DON'T GET YOUR NAME ON THE HIGH SCORE TABLE

1. You thought you'd be really cool and not read the manual until you'd completed at least three levels of the game.
2. You tried to eat a cheeseburger and play the shoot-'em-up at the same time, with the result that a huge stream of fat ran down the joystick, greasing it up so badly that it flew out of your hand at a really crucial moment.
3. Your tea was ready and going cold on the table.
4. A lemon meringue climbed out of the ventilation ports on your ST and introduced himself as Harold from the planet Plink. (Note: use this excuse only when your friend's a hippie who enjoyed the '60s a bit too much.)
5. Sarah/Marie/Lottie/Brian/Trevor/Zaphod, your girl/boyfriend, threatened to leave and take the cat with him/her unless you emerged from the bedroom for at least two hours. (Note: you'll also have to bluff your friends into thinking that you actually have a girl/boyfriend.)
6. The four page novella which came with the game made far more interesting reading than you'd first expected and you didn't actually get round to playing the game yet, honest.
7. Halfway through the first level, a subliminal message flashed onto the screen ordering you to travel to farthest Asia and discover yourself by living in a collective of root-eating nomadic herdsmen, and by a remarkable coincidence you just got back mere moments ago, er, effendi.
8. You didn't realise there was a high score table.
9. The score counter clocked itself and your resultant score, though actually in the millions, was listed as 25, which didn't qualify for the high score table.
10. You've been playing *The Secret of Monkey Island* so much that your shoot-'em-up reflexes have all but disappeared. You have however completed the wicked Lucasfilm adventure more quickly than all your friends.



● Daring desperado Neil Jackson takes his life in his hands for ST FORMAT by test driving the Lotus Elan. Gremlin's sequel to *Lotus Thingummy Turbo Challenge* woss-name promises to be less damaging on the face though.

→ What, you mean there's another issue next month?

Yes, that's right, we've had such a good response from all you *ST FORMAT* readers (all 70,000-plus of you) over the last two years that we've decided to carry on producing the best *ST* magazine ever. No, don't thank us, just rush out and buy the November issue which (in keeping with that strange practice of all magazines everywhere) hits the shops on Thursday 10 October.

Inside you'll find lots of words, some screengrabs, the odd picture and the occasional digit – oh yes, and this other stuff. Barring accidents and acts of a particularly perverse god, that is.

● Four and a half jelly babies to anyone who can tell us what Chaos Theory is. We'd really like to know because there's loads of chaos-related features in the next issue (as distinct from the usual chaos related to the issue). We're covering fractal music and the whole wibbly wobbly wonderful world of Mandelbrot and psychedelic patterns.

● We're continuing our two part investigation into what you can do with "serious" software with a look at the most powerful and versatile spreadsheets, word processors and databases you can use to do much more than simply improve business productivity.

● You've heard of living in a box, but have you heard of *Band-in-a-Box*? This MIDI improvisation package can fill in the bits of tunes you can't cope with,

such as the drums or the bass-line. If the MIDI-muse has been ignoring you, check out our feature next issue.

● *STOS* is the ever-so-easy game-programming package which avoids being too technical and enables you to create games and demos with only a basic knowledge of the BASIC language, if you see what I mean. But there's more to it than meets the untrained eye, and next issue we begin a three part course in getting the most out of *STOS*.

● We're also interviewing the programmer of *Magic Storybook*, a new animation package about to appear on *Rolf Harris's Cartoon Club*.

Plus there's all the usual stuff. Neil Jackson will be bringing his amazing technical knowledge to bear on the Desktop pages, as well as producing the best Cover Disk you could ever bung in your *ST*'s disk drive, Ed Ricketts will be busting the usual array of games and Andy Hutchinson will be seeing who he can annoy at Atari next month with his latest exclusive news story. We'll have loads of new games on review and probably lots of wibbly bits slipped in after a session at the pub.

To make sure you don't miss it, either snip out the coupon on this page and present it to your newsagent or – better still – turn to page 136 for news of how you can subscribe and get yourself a superb complimentary gift free and for no extra charge. **stf**

Why you can't find your *ST FORMAT*

Still having trouble getting hold of *ST FORMAT*? It's like this, you see. Because of our incredible efficiency, Britain's best and most popular *ST* magazine has actually been going on sale earlier than the advertised date in some places – which means it's even more likely than before to disappear off the shelves before you even get in the newsagent's door.

What can you do? If your newsagent doesn't have a copy on the shelf, try asking the person standing behind the counter. They might have some more in the back room. If that doesn't work, check one of the bigger newsagents, like John Menzies or WH Smith. If you don't want to subscribe – and see page 136 for some good reasons why you should – fill in the form below and hand it to your newsagent. Every newsagent in the country will be delighted to reserve you a copy each month – or even deliver it to your door.

Still no luck? Then call the extremely helpful Kate Hodges in Future's circulation department on 0225 442244 and tell her which of Future's magazines you're after and where you've tried to get hold of it. She can sort out your problems in no time at all!

Complete this form and hand it to your newsagent

Please reserve mecopy/copies of *ST FORMAT* every month, beginning with the November issue, out Thursday 10 October.

Name.....

Address.....

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TEN REASONS WHY THE LATEST MEGAGAME IS TWO YEARS LATE

1. The programmer was hit on the head by a freak meteorite, forgot everything he knew about programming in assembly language and had to relearn it all in the two weeks before the game was released

2. The film of the best-selling novel has been made, the star's been on Wogan, the video's been released, the T-shirts are on sale, the game tie-in deal has been clinched and the ad campaign has been running in *ST FORMAT* for six months before anyone realises that no-one's actually commissioned anybody to write the program

3. The programmer, thinking the Product Manager had said "conversion to a tree" on the phone when he actually said "conversion to *ST*," now has a six-foot elm in his living room consisting of thousands of bits of listing paper with code on it

4. Paul Woakes is the author

5. Someone made the unfortunate mistake of actually playing it before it hit the shops

6. The owner of the original arcade coin-op source code is a close relative of the Dalai Lama and lives on a mountain in Tibet, he won't use the phone because he believes it to be an instrument of the Devil and he will only give the rights away on personal receipt of seven Austrian goats and a packet of authentic 1970s Spangles

7. It's got the word "Midwinter" somewhere in the title

8. One or two other *ST* magazines (*what other ST magazines?*) reviewed it four months ago

9. Some friends of the programmer casually remarked that perhaps he shouldn't include those intro screens depicting 700 screaming children being beheaded by a naked female psychopathic warrior dwarf

10. The programming brief explicitly stated that there has to be some form of gameplay present in the arcade conversion, and furthermore that people should expect to enjoy it for at least 20 minutes

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16 MHZ AT-EMULATOR FOR ATARI ST/ MEGA ST

£199,-

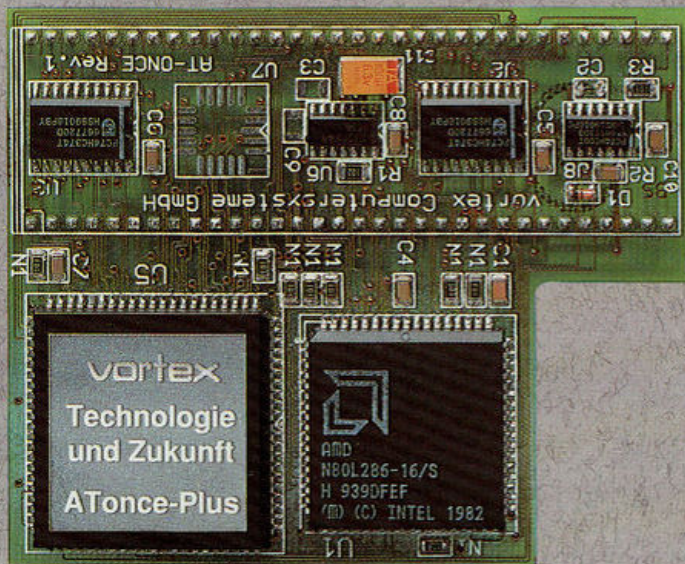
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The vortex CMOS Gate Array, the ATonce Chip-Level Emulation and ATonce AT-BIOS give the emulator a very high degree of AT compatibility.

16 MHZ 80286 CPU

vortex ATonce-Plus is based on the standard AT microprocessor.



VORTEX ATONCE POWER ON BOARD

vortex ATonce-Plus converts your Atari ST or Mega ST computer into a powerful 16 MHz 80286 AT system.

It is developed and produced in Germany by vortex Computersysteme GmbH.

vortex ATonce-Plus gives your Atari ST or Mega ST computer a complete AT emulation, that includes hard disk support and integration of RAM, emulation of the parallel and serial ports as well as EGA-/ VGA monochrome graphics and others in colour. Thanks to the highly integrated vortex CMOS Gate Array and the vortex AT-BIOS the world of DOS with thousands of programs becomes accessible (e.g. dBase, Excel, Lotus, Windows, Word).

vortex ATonce-Plus does not affect the normal operation of your Atari and is totally transparent when not in use. You can work under DOS as well as with your Atari software under TOS.

The ATonce-Plus board plugs directly into the Atari. When using the optional plug-in-adapters for the 1040 STE and the Mega ST no soldering of the socket is needed. This makes installation much easier.

SPEED AND COMPATIBILITY THE PLUS OF EMULATION

- 16 MHz 80286-16 Bit CPU
- SMT (Surface Mount Technology) compact circuit board with low power consumption and highly integrated CMOS Gate-Array
- Norton SI rating: 8.0 MIPS Test: 108%
- Full 704 KB of DOS base memory are available with 1 MB RAM. All memory above 1 MB can be used as Extended/ Expanded Memory, e.g. as program memory under Windows 3.0. ATonce-Plus runs unrestrictedly in the Real and in the Protected Mode
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- ATonce-Plus will work with hard disks that use an AHDI3.X compatible partition scheme
- Installation of up to eight logical STs on one physically existing ST with the accessory vortex HyperSwitch that enables direct and fast switching between Atari/ TOS and ATonce/ DOS
- Creation of individual DOS-screen-fonts with the font-editor vortex FontMaster
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- The Atari mouse can be used as a serial Microsoft mouse. It can operate at COM1 as well as COM2
- The parallel interface can be used as LPT1 under DOS
- All MSDOS versions from 3.2 up to 4.01 and DR-DOS 5.0 have been tested successfully
- ATonce-Plus is delivered with a detailed user manual. A 3.5" Atari disk that contains the installation and emulation software is included. DOS is not included
- ATonce-Plus can be fitted in the 1040 STE and Mega ST without soldering the socket by using the optional vortex plug-in-adapters
- For further information or the update-service, please contact your local Atari dealer or call Compuserve Box # 100015,330

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It's outrageous!
It's nothing less
than shameless
pornography. And
you call it art?



Leap into the well spring of light, kiss
the god-foot. My eye is a toe. To know
karma, reach deep into your aura and
swim in it. My ambient hut is your one-
ness. Save yourselves before Sunday.

Rock on down to your newsagent's on Thursday 10 October for next month's jam-packed
issue. We're checking out Chaos theory, bunging a MiG 29 on the Cover Disk, interviewing
Rolf Harris's head programmer (can you tell what it is yet?) and revealing in full technical
detail how to get all that jam off your fingers. Be here or be - er, someplace else probably.

What does the
popular phrase
trotsackaphobia
mean and where is
it used in this issue?
Answers on a post-
card to The Head
Postmistress, Box
1151, Warrabe,
New Zealand.

PLAY THE GAME MAN!

fellow humans!
Holmew J. Simpson here, with
an important secret:

**SPACE MUTANTS
ARE INVADING
SPRINGFIELD**

It's right man! A buncha slimy,
fible, totally gross and putrid
sters are taking over the
ics of the people who live here
they wanna build a weapon
s gonna take over the entire
ed!

PRETTY COOL, HUH?
way, yours truly is the only one
can see 'em! I've gotta spray-
t things, get radical on my
board, use my trusty slingshot,
in general behave like a
ince, man.

with evil dudes like Nelson
ally and Sideshow Bob getting
y way, it's a good thing I've got
est of the Simpsons to help me

you're a decent person a
ion, and somebody who cares
at this sorry planet, you'll do the
thing.

NO THE EARTH

THIS GAME!

ks man.



MATT GROENING



**CBM AMIGA
ATAR ST
SPECTRUM
COMMODORE
AMSTRAD**

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